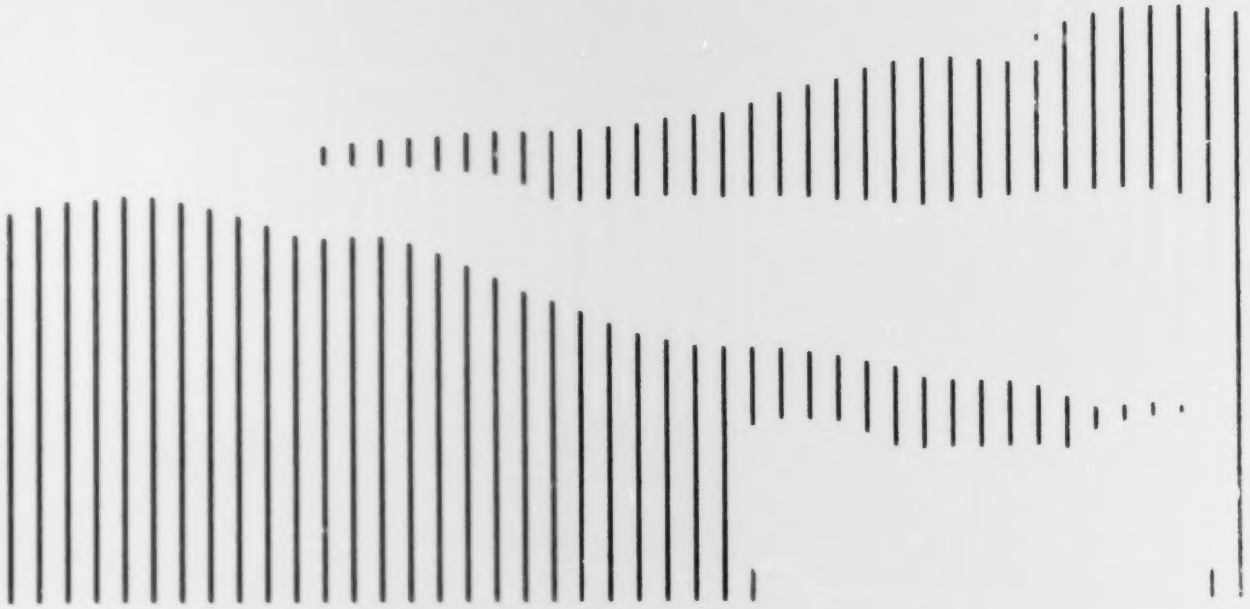
FACILITIES FOR THE ELDERLY IN CANADA

Design and Environmental Considerations



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FACILITIES FOR THE ELDERLY IN CANADA

Design and Environmental Considerations

Vol. 1 GERIATRIC UNITS IN HOSPITALS

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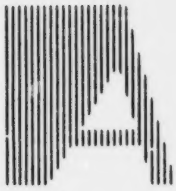


SPECIAL ENVIRONMENTAL NEEDS OF THE AGING PERSON

1 Related to Physical Considerations

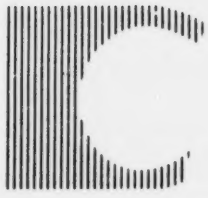
2 Related to Psycho-Social Considerations

IMPACT OF THE ENVIRONMENTAL NEEDS ON THE DESIGN OF THE UNIT

1 Related to Planning Considerations

2 Related to Environmental Considerations

3 Related to General Architectural Considerations



"THE PATIENT" AS THE FOCUS OF ACTIVITIES

1 Design Considerations:
Accommodating the Patient in His/Her Room

2 Design Considerations:
Accommodating Patient's Access to and Circulation Within the Unit

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On behalf of Health and Welfare Canada, Health Facilities Design Division (HFD), I would like to express appreciation to all members* of the Working Group on Care for the Elderly for their invaluable contributions to the development of the planning guidelines as well as for their wholehearted support of this program, without which this important document could not have been produced.

Special appreciation must also be given to the Federal/ Provincial Advisory Committee on Institutional and Medical Services and the Sub Committee on Health Facilities Planning and Construction for recognizing the need for such a document.

I would further like to acknowlege the efforts and dedication of Roger Diab, HFD coordinator for this project, in producing and editing this impressive document reflecting inputs, comments and reviews from the various professionals involved in this work.

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Director
Health Facilities Design Division

* See list page ii

Introduction

The first edition of Design Guidelines for Geriatric Units in Hospitals was prepared by Health Facilities Design Division, Health and Welfare Canada, within the framework of a series of published guidelines dealing with Special Care Units in Hospitals. The series consisted of a total of fifteen units inclusive of the Geriatric Unit.

This second edition is the first of a series of design guidelines which will be dealing with built environments for the elderly.

The approach and contents have been different for the two editions. In the first edition the work was accomplished by an architect, electrical engineer and mechanical engineer, consultants in HFD.

Following visits to units in a few hospitals, and meetings with users, drafts were prepared and sent for review to some of the users for comments. Finally comments were integrated in the drafts for final publication.

For this edition a different approach was adopted. It was necessary to know what types of facilities will be dealt with and what problems the designer might be faced with in these facilities. Therefore, it was considered essential to accomplish two objectives before starting the preparation of the publication. The first objective was to provide an update on the state of the art regarding care for the Elderly in Canada. An overview of a large number of services provided for the elderly in Canada was prepared by Pamela Cluff (Toronto) on contract to HFD.*

The second objective was to have a comprehensive study on psychosocial considerations related to the elderly and their impact on design. These two objectives were essential in view of the large scope of facilities for which guidelines would be prepared.

Dr. Darla Drader, an environmental psychologist, provided a study entitled "Design Guidelines for Geriatric Facilities - Psychosocial Considerations" on contract by HFD.

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Following the publication of these two studies, a multidisciplinary Working Group was formed to prepare these guidelines. The Working Group consists of the following members: (in alphabetical order)

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The following guidelines are the result of that team's effort.

The contents are focusing on the patient as the main user of the facility. It would be difficult to separate design considerations of built environment from other psychosocial design considerations and study them as two separate entities. Both are interrelated, every design feature has psychological implications for the user, it conveys a message or an intention or is directive of the user towards a specific end in the designers mind.

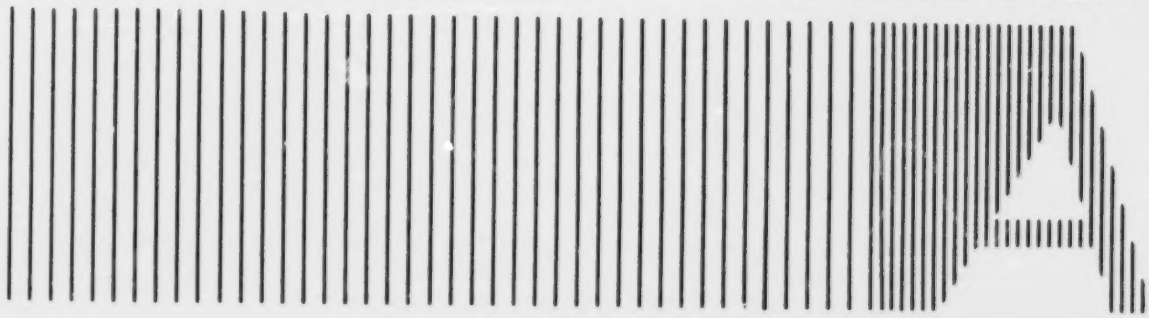
The difficulty of the task was to identify as much as possible, areas for the benefit of the reader's easy reference.

The following section starts with a general overview of special environmental considerations for the elderly. This is followed by a section on design considerations which will be dealing with activity related aspects of patients in a geriatric unit. In order to follow a comprehensive sequence, we will start with an examination in general terms of the environmental needs of the elderly which relate to changes and losses in their active capacities. This will be followed by the implications these changes have on design and the features required to accommodate these changes. First, general design considerations for the unit as a whole (i.e.

concept, layout, location, noise) will be examined. Next, patients' activities will be followed:

- in the room
- out of the room
- in other activity areas

SPECIAL ENVIRONMENTAL NEEDS OF THE AGING PERSON



A design which corresponds to the special environmental needs of the elderly and effectively reduces physical and sensory barriers, not only ensures patient's safety, it also enhances the patient's opportunity for independent mobility and control over his/her surroundings. It is this latter point: "the extent to which design can either enhance the elderly patient's capabilities and psychological well-being or actually serve to further threaten their sense of competence by failing to provide the appropriate environmental supports" that is less well appreciated or frequently overlooked.

1.1 COMFORT AND SAFETY

The literature dealing with the effects of aging discusses a number of characteristic physical changes which require special attention in the design of the geriatric unit. The most commonly noted age-related changes are of two types:

(a) sensory losses which affect the ability to hear, see, touch and smell;

(b) motor losses which affect one's physical strength and the speed with which one responds to environmental clues.

Rather than exaggerate these losses in physical capacities, the design of the geriatric unit should, at the minimum, eliminate any barriers which exaggerate physical limitations and instead propose solutions which sustain and even assist in increasing the patient's capabilities. For example, distances should be minimized, clear directions should be stressed and confusion in the layout should be avoided.

Throughout the design of facilities for the elderly, safety is the most important consideration resulting from losses particularly those losses due to the mobility, agility and balance problems as well as others such as the physical changes which accompany the aging process. The safety features built into the design of the unit should not only guard against the possibility of accidental injury, it must also afford patients a sense of confidence that they can in fact negotiate the space, balance and mobility problems not withstanding. A safe design also contributes to feelings of

environmental competence by covering a wide range of areas: barrier-free access, floor finishings, warning systems, fire protection, orientational systems, glare, etc.

More details regarding the design considerations with respect to safety are dealt with in Section C-2.2 page 37 of these guidelines. Also, design features promoting safety are described related to various patients activities covered in this document.

1.2 SENSORY CHANGES

(i) Vision

Much of the aging population in the geriatric unit have acquired vision difficulties. These difficulties could be attributed among other things, to ailments such as cataracts, yellowed lenses, etc. They pose special problems for the lighting designer in providing safe, accident-free lighting conditions for the elderly.

The changes in visual capabilities associated with aging which require consideration are: reduced distance vision and distorted depth perception; increased sensitivity to glare; reduced peripheral vision; reduced ability to discriminate fine detail and detect embedded figures; decreased ability to adjust to changes in lighting levels; increased incidence of defective colour vision (discrimination of green-blue colours fades the most, red the least); reduced ability to distinguish between two contrasting surfaces; and reduced ability to clearly distinguish objects in low light.

(ii) Hearing

The losses in hearing ability which have design implications are: a generalized loss of hearing sensitivity; poor pitch discrimination which makes it more difficult to discriminate speech sounds and to understand others in large groups; and a reduced ability to determine the direction of the noise or sound source.

(iii) Thermal Sensitivity

Elderly people experience increased sensitivity to rapid changes in temperature.

1.3 MOTOR CHANGES

The age related changes in motor ability which affect the design of the unit are: reduced balance and agility; reduced muscle strength and increased joint stiffness; and slowed responses. The reduced agility, balance and muscle strength which accompanies aging also needs to be considered when selecting furniture for patient rooms, dining and social areas. The finishes and floors should accommodate balance problems.

1.4 MEMORY AND LEARNING CHANGES

Memory and the ability to interpret or assimilate new information contribute to our ability to cope with novel environments. The memory and learning changes associated with aging which affect coping ability and require consideration in design include: deficits in short term memory and reality orientation; reduced ability to retrieve information quickly; reduced ability to focus on relevant information or detail; and reduced ability to form new associations.

These physical changes which accompany the aging process have a direct bearing both on the decisions taken for the design and layout of the geriatric unit. For example, the patient rooms should be such that distances to social activity areas or nourishment centres are minimized to encourage regular use.

The appropriate match between the design and the physical changes accompanying aging is critical; mismatches not only threaten patient safety and security, but as well, create barriers to functional mobility, independence and psychological well-being.

A design which responds only to the physical changes accompanying the aging process omits to address another important type of the elderly patient's needs: the psychosocial needs of the patient.

Here, the consideration for the designer is awareness of the variety of psychiatric ailments resulting from social factors, bereavement, social isolation, feelings of uselessness, and the inability to adapt and cope with rapidly changing environmental circumstances. Usually these result in lethargy and lack of drive.

2.1 RELOCATION

Admission to a geriatric unit involves a relocation from a familiar environment to a foreign, institutional physical and social setting. Unfamiliar and institutional physical and social settings are initially more stressful and disorienting for all people; for the elderly who are both more vulnerable to and less well equipped with the ability to cope with additional stress, these feelings of disorientation will be magnified.

In addition to being in an unfamiliar environment, admission to a geriatric unit also typically involves the additional stresses of: a severing of personal relationships and social roles; interaction with total strangers; a lack of, if not total absence of privacy; disturbances to normal eating and sleeping habits; and little, if any control over the personal and social environment.

The stresses created by the social and physical climate coupled with the problems associated with reduced mobility, agility and illness, tend to encourage a by-product reaction to relocation, namely, hospital induced dependency and withdrawal.[1] It is however possible to offset some of this institutional dependency by addressing the psycho-social and physical needs of the elderly in the design and layout of the unit. The psycho-social needs to be addressed include: privacy, both visual and acoustical; private and frank exchanges with family, friends and medical staff; private exchanges with other residents; privacy in examination, sanitary and bathing areas; the need to maintain some orientation and continuity with the immediate past; the need for

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1 Refers to the Environmental Docility Hypothesis advanced by Lawton and Simon (1968).

information, which enhances one's sense of control; the need for social interaction, both passive and active; the need for a sense of control, independence and identity; and the assurance of personal safety and security.

2.2 LONELINESS AND REJECTION

Activities which help patients overcome feelings of loneliness and rejection are important to consider in the design. For instance, the layout should foster the establishment of identifiable "families" of patients and accommodate differences in their lifestyle and attitudes. This would encourage supportive groupings of patients who share the same interest and get along well together. The architect can achieve this goal by grouping rooms around covered courtyards or atria, thus avoiding long and undesirable corridors. If this is not possible in an acute care hospital because of the strict modular similarity between wards (usually single double-loaded corridor i.e. rooms on both sides; or race track plans, i.e. access to rooms from two parallel corridors with services between them) then the geriatric patients rooms should overlook common areas with interesting views of activities and outside spaces.

In all cases, curtains or blinds should give the patient the choice of watching these common areas or protecting his/her privacy in the room.

Distances between bedrooms and social activity areas should be minimized and should be provided with adequate orientation signage or cues (colour, smell, physical referral items, etc.)

Technological improvements in communication systems could also be used effectively to overcome a sense of isolation and loneliness. They allow the severely disabled or deaf individuals some method of communication with family and friends. For instance, telephone pick-up devices which activate hearing aid amplifiers and eliminate interference from ambient noise could increase the interactions of patients with relatives and friends through telephone conversations.

Nurse call buttons and telephone plug-ins[2] should be in different locations to allow for communication when furniture layout is altered according to patients preferences.

2.3 INDIVIDUALITY

It often happens that patients in geriatric units in hospitals have to wait for a vacancy in other facilities such as intermediate or chronic care facilities. In such cases the patient's stay is long and all efforts should be made to alleviate the stress and anxiety of expected relocation suffered by the patient. Design of the room should provide flexibility for some long stay patients by promoting the establishment of a sense of place. They could be permitted some freedom in rearranging furnishings in their rooms and bringing items from home. In long term cases, they could be allowed, where possible, to bring into their rooms minor pieces of home furnishings, e.g. their comfortable chair. To preserve a sense of identity and individuality, shared rooms can be divided into personal space using demarcation lines such as colored tape in order to allow for flexibility without overrunning to other resident's space.

Patient rooms should be equipped with adequate closet space for personal clothing, storage for outer clothing and a vanity for long term stays. This space should be designed at level for wheelchair use. e.g. low drawers and hooks.[3]

Different colours in patient's rooms would emphasize the individual nature of these areas.

Individual control of room temperature and lighting should be provided as well as low night lighting in rooms and the possibility for staff to reduce the corridor lighting at night in

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2 For more information see page 16: on Communications and Signal Systems.

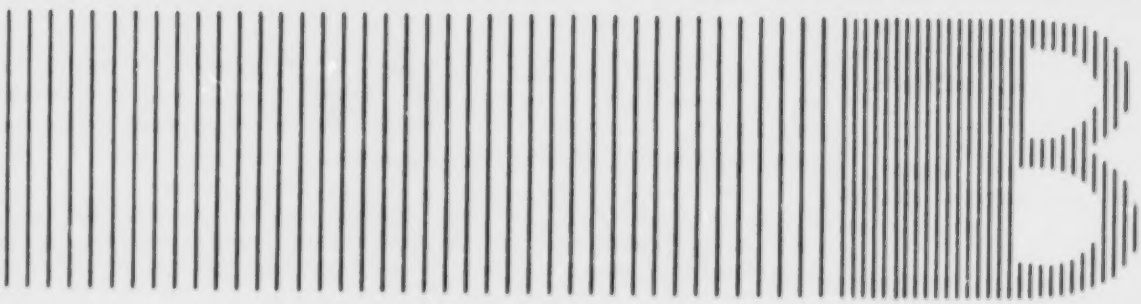
3 For more details, see C.M.H.C. publication entitled, "Housing the Elderly".

order to reduce dark adaptation problems. Ventilation or air conditioning should be provided at the rate of 4 air changes per hour.

Each patient's room should have a temperature control by its own thermostat, and the thermostat should be the enclosed type, key operated, without thermometers.

The winter design temperature range for geriatric units should be 20°C to 24°C (68°F to 75°F) with the possibility of individual adjustment according to the patients needs.

IMPACT OF THE ENVIRONMENTAL NEEDS ON THE DESIGN OF THE UNIT



1.1 MAJOR PLANNING CONSIDERATIONS

Geriatric services are functionally and structurally complex as a result of two major factors:

(1) the projected increase in the older portion of the population in Canada; and

(2) the new philoscphies related to the environments most suited to the care and development of older people.

These two factors are moving the development of geriatric facilities from the stage of spontaneous and uncoordinated planning to a stage in which careful planning, organization and management are being applied by a team of professionals.

World experts on the planning and organization of geriatric services have been unable to reach definite conclusions as to whether geriatrics should be recognized in all countries as a medical specialty in its own right. The architect and planner's first responsibility in designing any geriatric service is to determine with the help of the users the definition itself. In Canada, the various types of geriatric facilities are not only different from province to province, but the same nomenclature could have different meanings.

It is essential for the architect to interpret correctly the client's definition of levels and types of care and the criteria considered, in order to create an environment that will accommodate the users' requirements.

The next step is to become familiar with the geriatric program established and to determine its magnitude within the context of the general health program for the community.

This allows the architect to determine the extent to which this particular facility complements others within the community and to design an optimum fit. Also, the architect should be aware of the type of community to be accommodated. Different communities might require different social programs and activities dependent upon characteristics such as ethnicity, the prevalent interests of their members, and other features of the main client: "the patient".

- In the case of geriatric services in hospitals, the designer's first and essential consideration is to create an environment appropriate to patients with greatly diminished physical and sensory capabilities.

  Some patients are affected by malnutrition, circulatory disturbances, failing sight, poor hearing and slow locomotion. First and foremost, design should take these impairments into account; distances should be minimized, clear directions should be stressed, confusion in the layout should be avoided.

- Second consideration for the designer is awareness of the variety of psychiatric and emotional ailments resulting from social factors, bereavement, social isolation, feelings of uselessness, and the inability to adapt and cope with rapidly changing environmental circumstances. Usually these result in lethargy and lack of drive.

  The design considerations should reflect an awareness of the causes of each of these ailments and assist in their elimination as much as possible from the layout. For example, social isolation could be eliminated by a layout that fosters clusters of patients; bereavement could be dealt with by additional functional areas in the layout for personal interaction with staff or other family members; feelings of uselessness are often overcome by providing areas for small hobbies where skills and abilities can be maintained or developed, etc.

- Third consideration is terminal cases and deaths. Generally these increase with age. This particular consideration should be approached with special attention to:

  (1) the privacy and dignity of the dying patient, his/her relatives and the surrounding peers; and

  (2) the route and the required privacy for the various procedures on the body until it leaves the hospital (i.e., from room to morgue to undertaker to funeral parlor).

  The magnitude of all these special features is dependent upon the health programs established for the facilities.

Finally it is recognized that confusion is a major problem for one third of all geriatric patients. One school of thought is to separate the confused person from the others so that in their particular environment within the facility, great emphasis is placed upon a stable, non-threatening environment, based on the fact that it is this group that require security provisions. However, the dilemma of separating the confused is that they might end up being wrongly assigned to psychiatric wards.

Thus keeping them with the others and increasing security measures might jeopardize the non-confused. On the other hand, separating them might label them fit for the psychiatric ward.

The above four planning considerations serve to indicate the type of decision-making at the planning level which might have a long range effect on the care for the elderly. It stresses the importance of an understanding by the planners (architects, user groups and others) of different needs of different groups, as well as subsequent different design needs to promote the well-being of various types of elderly persons. It is hoped that these issues are discussed and solved prior to the design by the various groups involved into providing a facility.

1.2 RELATIONSHIP TO OTHER CLINICAL SERVICES

The first critical choice to be made by the planners is the location of the geriatric unit within the hospital. Although the unit has functional relationships with nearly all other parts of the hospital, it is important to locate the geriatric unit on the ground floor to allow access to gardens and grounds in summer; allow easy evacuation of bed ridden patients in times of emergency and prevent day patients long distance travel within the hospital. However, by doing so, care should be taken not to separate the elderly sick by great distances from other acute care areas with the obvious result of isolation in addition to their diminished accessibility to modern technology, specialists, and essential services available at the hospital.

1.3 GROUND FLOOR VS UPPER FLOORS

In a ground floor location, there are usually more possibilities to provide access to valuable features that are too often placed low on the list of priorities, such as garden areas, pleasant solaria, and contact with people outside. These features are to be weighed against the advantages of an upper floor location. A ground floor location also permits the designer to plan and locate lounge and activity areas with connections to an outside courtyard area.

1.4 TRANSPORTATION VEHICLE ACCESS

For cases where the geriatric unit in the hospital has a day care service or a day hospital service for outpatients, easy access for transportation vehicles to the closest entrance is required. There should also be adequate directional signs to the unit from this entrance and telephones should be readily available for taxi calls. The main entrance should be easily recognized from the street, protected from weather conditions, well lit at night with attractive access, and should not have steps or slippery walking surfaces.

2.1 THE SPACE WITHIN

The space within the unit should have a focal point, such as an atrium. This not only reduces the image of institutionalized care, but is also a good solution to the need for repeated sensory stimulation felt by those in advanced old age; they become aware of where they are by easy reference to the focal point. It also overcomes the tendency for lounges not to be used when they are isolated, and reinforces a feeling of internal community by purposely providing occasions for contact between those in advanced care and those who are more independent.

Aside from the visual emphasis placed on various spaces, the architect should use sound, touch, and even smell to tell patients where they are located in a particular building and to increase their awareness of it. The studies of Nathan Levine[4] have established favourite colours and suggested effective distances for interaction (for social interaction about a 1800 mms radius, and for public interaction about 3600 mms radius).

According to a report by Byerts and Bonway, "given the unfortunate choice between esthetic values (and a humane environment) or utilitarian function, the designer should often choose the first".

Finally, the atrium provides a space that is large and pleasant enough to accommodate the traditionally large groups and a variety of community activities.

Clusters and Courtyards

The layouts should foster the establishment of identifiable "families" of patients, each with a lifestyle of its own, within the institution. This would encourage supportive groupings of patients who share the same interests and get along well together.

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[4] Nathan Levine and Associates, Architectural Record, May 1977.

When dealing with covered courtyards, the architect should study the most appropriate concept for the facility, based on the users' (patients and staff) preferences. He/she will have to consider two main ideas:

(1) a general focus for the facility - a main courtyard or atrium;

(2) separate courtyards with rooms wrapped around them.

The second concept helps in defining "families" of patients and encourages social interaction. This depends mainly on the number of patients and their mobility.

The best alternative would be a combination of both concepts.

2.2 LIGHTING

Special attention should be paid to the design of the lighting system in the geriatric unit in the hospital. The aging process of the eye leads to increased difficulty for the elderly to cope with many aspects of their visual environment. Their visual acuity has often deteriorated and they experience steadily decreasing abilities to focus to adapt quickly to variations in darkness and light; and luminance brightness and glare becomes a major problem for them.

Older patients need a higher level of task illumination to achieve higher contrasts so that they can see as effectively as the relatively younger individuals. But stressing the importance of increasing the quantity of illumination is only part of the problem. The quality of illumination in geriatric areas must also be improved. This means controlling the level of glare, reducing veiling reflections, improving the distribution of brightness levels, and improving visual comfort.

Various techniques are available to the lighting specialist to optimize the illumination system design in the environmental space for the older individual. For instance, since elderly patients are quite sensitive to uncontrolled glare, special care should be taken to reduce specular surfaces that result in reflected glare. Matte surfaces are therefore recommended for room surfaces and room furnishings.

Uncontrolled brightness in the environment produces adverse effects for the elderly. The proper control of brightness contrasts results in a significant improvement in visual performance and in visual comfort. Usually optimum visual comfort is achieved when the luminance of a specific visual task is approximately three times the luminance in the remaining space. Unshaded windows and inadequate shielding of the light source are also major design problems affecting the visual comfort of the elderly patient. Window glare can be resolved by introducing reflecting glass, reduced light transmission glass, various types of shades, baffles, and the judicious use of drapes. Direct glare from lighting can be reduced by the introduction of proper shielding of light sources or by using low brightness type fixtures (e.g., with

parabolic louvers) and by properly placing the fixture so that the viewing angle is outside the direct glare zone of the observer.

The need for better lighting is important in recreation and dining areas of the geriatric unit and in physical and occupational therapy areas, in toilets, in barber and beautician areas, and especially in lounge areas. Reading lamps in lounges should provide high illumination levels, should be designed to avoid undue glare, and must provide maximum safety from potential electrical and mechanical hazards.

Every effort should be made to avoid the "institutional look". Attractive, well lighted and colourful surroundings will contribute much to the physical and mental well-being of patients and help alleviate the emotional stress, fear and anxiety, which often confronts the elderly patient.

The design of the lighting system in patient areas, nursing stations, and in administrative and service areas of the unit can be treated much as in other parts of the general hospital. Primarily, the approach is to fulfill the following basic criteria: a) provide adequate lighting levels consistent with the requirements of the specific visual task involved; b) maximize visual comfort; c) minimize glare; and d) emphasize good lighting quality. These criteria involve the judicial use and application of such factors as the proper colour and reflectances of interior walls, ceiling and floors; the type and quality of lighting fixtures used; the efficiency, lumen output and brightness of light sources; the colour of light sources and the effective control of direct and reflected glare.

As mentioned in item 1.2 page 2 the acquired vision difficulties in the aging individuals pose special problems for the lighting designer in providing safe, accident-free lighting conditions for the elderly.

One of the factors contributing to accidents is due to the difficulty that aged persons experience with eye adaptation when moving from bright surroundings into dark ones and vice versa. These changes in illuminance levels have caused accidental falls by older people on stairs. It has been reported that most falls occur on the top of the landing on

the first step. It is on landings near the first step that abrupt changes in luminance often occurs. Lighting on the landing may not provide sufficient light on the first few stairs, creating an eye accommodation problem due to a sudden drop in the luminance level at that location. Local lighting on the first few stairs would help alleviate this age-related visual difficulty.

No attempt has been made in this guideline to recommend illumination levels for each of the areas or spaces in the geriatric unit. The procedure for selecting lighting levels is complex and the final value selected depends on many diverse variables. Among these are such items as: the potential visual task to be performed; the importance, duration and difficulty of each visual task; the importance and/or accuracy in performing the visual task; the age of the observer; surface reflectances of walls, floors, furniture; energy savings, etc. The reader is directed to consult the Illuminating Engineering Society's 1981 Lighting Handbook on Application for currently recommended Illuminance Values for Lighting Design in Health Care Facilities.

Suggestions should be made with regard to the various types of light sources, i.e., fluorescent, incandescent, etc., in each area with a view to the quality and type of environment required, e.g., quiet, home, social area.

2.3 COMMUNICATION AND SIGNAL SYSTEMS

2.3.1 Nurses' Call System

An audio-visual nurses' call system should be provided so that a call from the patient's bed registers at the nurses' station as well as activate a dome light located in the corridor over or beside the ward room door. It should be visible down the length of the corridor. The system should also include an indicator light at each bedside station to indicate to the nurse the patient requiring aid. The patient bedside station should also contain a speaker, a receptacle for a pushbutton cord-set and/or a receptacle for a pillow speaker, if desired. The pushbutton may be replaced by a light-pressure squeeze bulb for use by geriatric patients who are unable to operate the pushbutton arrangement. An emergency pushbutton station which consists of a single

pushbutton on a wall plate or a cord operated button with a "call-placed" light and reset button, should be installed on the wall of the ward room toilet so that if the patient requires aid while he/she is using toilet facilities, he/she may place an emergency call to the nurses' station from that location. Activation of the emergency station should automatically initiate a flashing red light at the dome light and at the nurses' station. This call should be arranged so that it can be cancelled at the patient's station only, hence requires that the nurse give first priority to answering the emergency call. Emergency call stations should also be installed in all bathing and treatment areas.

If voice communication is provided it should allow the nurse to talk to the patient after initiation of a call by a patient from his/her bedside. However, it has been found that voice communication leads to confusion of elderly patients with sensory deficits.

2.3.2 Voice Paging System

If a voice paging system is provided in the geriatric unit, the system should be part of the hospital's main voice paging system but its connections should be arranged so that it may be sectionalized at the main control to permit the geriatric unit to be paged separately or turned off. Provision should also be made to facilitate operation of the paging system in the unit at different volume levels. If desired, provision for background music could also be included in the voice paging system.

2.3.3 Telephone Systems

Telephone facilities are required at the nurses' station and in the nurses' and doctors' offices. Public coin-operated telephones should be installed in the waiting area for relatives of the patients. Telephone jack outlets should be provided at each bed location so that patients may obtain private telephones for their own use during their stay if they so desire.

2.3.4 Television Systems

Provision for entertainment such as television facilities for the patients should be considered. A carefully engineered

system should be installed which includes an outdoor antenna and coaxial cable lead-in fed through an amplifier to individual TV antenna outlets. The position of TV sets should allow for comfortable viewing from the bed as well as from the sitting arrangement in the room. A receptacle must be provided beside with TV antenna outlet to supply power to the TV receiver; pillow-type speakers are recommended for all patient rooms so that a patient who wishes to view a program need not disturb other patients in the same room. A television outlet should also be provided in the patients' lounge area.

2.4 ELECTRICAL POWER SUPPLY

The geriatric unit should be supplied with electrical power from the hospital's main distribution panelboard which serves that particular area of the hospital. Panels feeding lighting, receptacles and small appliances, should be located on the same floor as the circuits they feed and should be sized to contain at least 25% space circuit capacity for future load growth. All panels should contain a typewritten directory, mounted inside the panel door, identifying the load served by each circuit.

The electrical installation should comply with the requirements of the Canadian Standards Association, Canadian Electrical Code, Part 1, entitled "Safety Standards for Electrical Installations" as well as applicable local codes. Materials used in the electrical system installation should be of the very best quality to ensure reliability and durability. It is false economy to attempt to reduce construction costs by utilizing inferior grade materials. This procedure often increases maintenance and repair costs and contributes to frequent failures, extended periods of down time and inefficient operation.

2.5 EMERGENCY POWER SUPPLY

Certain specified loads in the geriatric unit should be connected to the hospital's emergency generator system. These loads would of course include selected lighting for directional signs, for exitways, stairways and corridors. Selected lighting and receptacles at the nurses' station, power for the nurse call system, the paging system, and the fire alarm system. Required power and lighting to maintain telephone

service, one receptacle per bed-wall in each patient room containing general care beds, and one receptacle and selected lighting in the ward treatment room.

2.6 SWITCHES AND RECEPTACLES

Silent or quiet type switches, specification grade, should be used throughout the unit to reduce noise. The corridor lighting in the patient ward area should be controlled by switches located at the nurses' station. This permits the nurse to reduce the lighting level in the corridor during periods of low corridor traffic (e.g., during the night and early morning). The switches for patient night lighting should be located at the entrance to the room. These may be illuminated type toggle switches so that they may be easily reached and operated in totally darkened rooms during the night. The switch to operate the patient reading light should be accessible to the patient.

Receptacles should be specification grade, rated 15 or 20 amperes, 3 wire, "U"-ground, 125 volts. Specially rated receptacles should be provided in the corridor at appropriate intervals for portable x-ray units. Specially rated receptacles should also be provided in certain assigned areas for food carts, if required.

In patient rooms, a minimum of two duplex receptacles located on either side of each bed should be provided. A special single receptacle should be installed at the bed-head wall for each motorized bed, if these are to be supplied. Receptacles which are connected to the emergency power supply shall be coloured red. Hospital personnel should be advised that these red receptacles are energized when either the normal or emergency power supply is energized. Additional duplex receptacles shall be provided in remaining areas of the patient room to allow for use of floor lamps (reading) etc. They should comply with local codes and be installed approximately 460 mms above the floor. A receptacle should be provided in the toilet for the use of an electric shaver and hair dryer.

2.7 NOISE

For the following reasons the geriatric unit should be located in a quiet area of the hospital,

- There is a great variation in the sleeping and rest patterns of old people, e.g., morning and afternoon naps, late rising, etc.

- Interruptions of sleep cycles have adverse effects on the well-being of most individuals, since sleep is an essential part of the recuperative process.

Thus it may also be necessary to use design features that will reduce noise; for example, double glazed and weather stripped windows, high sound transmission coefficients (STC) for walls and floors, solid core doors and sound stripping indoors.

2.8 HEATING AND VENTILATION

2.8.1 Environmental Control

The environmental control should be designed in accordance with the National Building Code, Part 6, CSA Standard and all other provincial and local codes that apply.

2.8.2 Design of Temperatures and Humidity

The winter design temperature range for the geriatric unit should be 20° C to 24° C (68° F to 75° F) with the possibility of individual adjustment according to the patient's needs. The summer design temperature should be 24 to 27° C (75 to 80° F), with a relative humidity of 30 to 50%.

2.8.3 Temperature Control

In order to avoid deep body temperature falling below 35° C (state of hypothermia), and a deep body temperature increase above 39° C (state of hyperthermia), a precise room temperature control should be provided for each individual room. The thermostat should be the enclosed type, key operated without any thermometers to eliminate the possibility of manipulation by patients or visitors who may have impaired vision and set room temperatures which could be

detrimental to the patient's health or contrary to the prescribed treatment by the physician.

2.8.4 Heating Medium and Equipment

Induction units and steam should not be used as any part of the direct heating system in this unit.

2.8.5 Air Movement

Ventilation and air conditioning should be provided with special consideration of air movement velocities in the patient seating or standing position zones.

In order to eliminate undesirable effects on the thermal comfort of the patients, the velocities of inside room air movement in the patient's zones should be between 0.20 and 0.30 m/sec (40 to 60 FPM).

Air velocities below 0.2 m/sec may generate a feeling of lack of air, and above 0.30 m/sec may cause an unpleasant feeling of draught and be detrimental to the patients mental or physical health.

2.8.6 Ventilation Rates

Ventilation and air conditioning should provide the following rates:

- Patient's room: up to 4 air changes per hour.
- Bathroom and washroom exhaust: up to 10 air changes per hour.
- Waiting and living room areas: 4 air changes per hour if smoking is not permitted.
- Craft room should have provision for a special exhaust and air supply systems if woodworking equipment is installed (vacuum exhaust with saw dust collector, etc.).
- Nourishment station area: up to 4 air changes per hour. When a hot plate is installed, a canopy c/w exhaust fan and an individual control switch should be provided.
- Kitchenette room: up to 10 air changes per hour. When cooking appliances are used a canopy c/w exhaust fan, grease filter and individual control switch should be provided. The air from the canopy exhaust should be discharged to the outdoor open air.

- Dining room: up to 6 air changes per hour.

2.8.7 Fresh Air Supply

A fresh air supply is requested by most health related professionals (doctor, nurses, etc.) and should be provided for all rooms in the unit with up to 2 air changes per hour.

The ventilation system however should be checked especially in very tight sealed buildings if fresh air is not below 2.5 l/sec (5.3 CFM) per occupant in any room.

2.8.8 Ventilation System Control

If a day hospital program is part of the unit, supply air and exhaust air systems for the geriatric day hospital unit should have double speed fans and a night setback device in the control system to save energy because the day hospital is operated during the scheduled hours only. It should be decided at the planning stage of the geriatric unit if such supply and exhaust systems as well as setback devices should be installed in case a day hospital program is added in the future.

2.9 PLUMBING

2.9.1 Plumbing Systems

All plumbing systems should be designed and installed according to the National Building Code, Part 7, applicable provincial and local codes, and CSA Standard Z317.1M1978.

2.9.2 Hot Water

Hot water for general use from the central or local system should not exceed 45° C (110° F) and precautions should be taken to prevent a build-up of higher water temperature in piping systems during low or no use periods.

All mixing valves in the baths or showers used by the patients should have a built-in high temperature limit safeguard device set at 40° C (104° F) to protect handicapped patients from accidental scalding.

2.9.3 Vacuum Breaker

All shower heads with a flexible hose should have a built in vacuum breaker located at a sufficient and safe level.

2.9.4 Plumbing Fixtures

2.9.4.1 Patients' Washrooms

The patient's washroom should have the following fixtures:

- the water closet should be an elongated syphon-jet bowl, with a flush valve located on the side of the toilet; the toilet should have a free back to lean on, and an open double seat for adjustment of height, with integral check hinge or seat bumpers;

- handbars should be located on both sides of the toilet for left and right handed patients;

- the lavatory should be vitreous china with anti-splash rim, soap dishes, overflow and drain without stopper and integral perforated grid. Water supply fittings should nave 4 inch wrist control handles and a gooseneck spout with aerator. The model of the lavatories and their heights should be selected for wheelchair patients.

- Floor drains may be required in some jurisdictional areas.

2.9.4.2 Patient's Bathroom

The patient's bathroom should have the following fixtures:

- a water closet as above;

- a lavatory as above but vanity type;

- a bathtub with a slip-resistant floor, handbars on three sides of the tub, and a hand-held adjustable shower head on the vertical bar, for use when patients are seated or standing in the bath.

2.9.4.3 Special Bath and Shower

Special bath and shower facilities within the unit should be provided for hygienic and therapeutic use.

- A special bathtub accessible from three sides c/w precise water temperature control, agitator with jet action and hydraulic chair lift is required. In the same room a lavatory, preferably the vanity type with some storage space for towels, etc., is required for staff assisting the patient.

- A special shower without any floor curbs is required for wheelchair patients; it should have a hand-held adjustable shower head on the vertical bar, a safeguard mixing valve, and sufficient floor space for patients to sit on a bench and dry themselves and facility for the occasional use of a mobile lift for wheelchair patients and the staff assisting them.

- Shower seat, grab bars and shower control handles should be at the wheelchair level.

- Floor drain should have a perforated top, not grid and a slight floor slope to drain the shower area to allow wheelchair patients a smooth ride.

2.9.4.4 Hairdressing Salon

A dark coloured or stainless steel hairdresser sink is required as a protection against dye spots. Cold and hot water and a hand-held shower head should be provided in the hairdresser sink. Consideration should be given to the height of the sink for normal and wheelchair patients (possibly water and waste lines should be the flexible type for adjustment).

2.9.4.5 Kitchen and Laundry

- Residential type kitchen and laundry facilities are required for the assessment and evaluation of patient's ability to live in the community and perform activities of daily living. Flexible connections of equipment and plumbing fixtures should be considered so that the height

of the fixtures and equipment can be adjusted from the floor level during evaluation exercises for normal and wheelchair patients.

- Residential laundry room should be equipped with laundry double sink and drain board.

- Kitchen should have a double stainless steel sink, hot and cold water supplies with shut-off valves located under the sink and water control faucets with elongated levers to facilitate wheelchair patients easy operation.

2.9.4.6 Food Service Area

Plumbing fixtures in the food service area for this unit depend upon the food processing and distribution systems for the entire hospital. In any case some basic fixtures and equipment are required as follows:

- a two compartment, stainless steel sink (counter top type) c/w hot and cold water supplies;

- coffee and boiled water urns (electrically operated);

- a toaster and two hot plates;

- a domestic type 15 cu. ft. refrigerator.

2.9.4.7 Craft Room

A one compartment, stainless steel sink with sand trap is required in the treatment and craft rooms. The sink should have hot and cold water supplies, with a gooseneck faucet, and elongated control levers.

2.9.4.8 Individual Treatment Areas

Individual treatment area should be equipped with a double stainless steel sink and a floor drain at the hot and ice packs machine.

2.9.4.9 Resuscitation and Gymnasium Rooms

A washbasin in required in the resuscitation room. In the Gymnasium, a drinking fountain is required for wheelchair patients use.

2.10 FIRE PROTECTION

Fire protection system of this unit should correspond to all requirements related to fire safety as defined by the National Building Code latest edition and all other provincial and local fire regulations.

2.11 MEDICAL GASES

- Medical gas systems should be designed and installed according to the CSA Standard X305.1 - 1984 edition with all the latest revisions.

- Consideration should be given to provide each bed in the patients' rooms with one oxygen outlet for use in emergency cases only.

- Other medical gases such as vacuum or compressed air are not required, but provision should be made in the nurses' station for a portable vacuum pump to be kept for emergency use only.

3.1 DOORS AND WINDOWS

- To allow seated patients to see out of windows. Sill should be no more than 840 mms from the floor.
- Consider sliding doors where possible.
- Outside entrance doors should be automatic, preferably sliding. A small levelled space at the top of the entrance ramp should be provided to allow people with wheelchairs, crutches or canes easy access.
- Fire doors should be electronic, i.e., they are always open but close automatically with a fire alarm activation.
- Door handles should have levers not knobs and be 915 mms to 990 mms from the floor.
- Avoid spring closing doors or allow a 4 to 6 second delay in closing.
- Locks should be large enough for those with poor manual dexterity to manipulate.
- Side hinged windows are easier to open than lift up windows. Controls should be at a height of 1370 mms.
- Doors should be at least 915 mms wide on inside measurement; no step or ledge.
- Doors should not require more than 3.6 kgs of force to open and this to be done in one movement.

3.2 RAMPS

Changes in levels should be avoided in a geriatric unit. Ramps when necessary should be mild in slope because of the frail condition of many elderly people who are confined to wheelchairs.

Ramp slopes should not be steeper than 1/12 and preferably no more than 1/20. They should have hand rails on either side which extend 330 mms beyond top and bottom of ramp.

3.3 PASSAGES AND CORRIDORS

To allow the passage of wheelchairs, the clear width between handrails should not be less than 1470 mms. For all purposes, it should be 1830 mms.

A long, narrow corridor can present a major obstacle to the patient with limited mobility and strength. Rather than attempting to negotiate such a distance, elderly patients tend to remain confined to their rooms where their major choice of activity is of the passive solitary type. While most people enjoy some degree of passive and private activities, opportunities to socialize with others are essential.

Long corridors may be broken up with recessed seating areas which can be used as resting and conversation areas. Other options for reducing the perception of a formidable distance include an occasional window installed along the corridor as well as variations in colour and texture.

Hand rails should be provided on both walls of the corridor to act as balancing aids and movement assists. Since an abrupt ending of this support could easily throw the patient off-balance, hand rails should either return to the walls at openings along the corridor or be equipped with a tactile warning at a reasonable distance from the end.

3.4 STAIRS

Stairs commonly used by geriatric patients should be designed with straight, short runs, and a maximum of 10 raisers per flight. Steps should have plain faces with no projecting nosings or open risers. Hand rails should extend at least 610 mms beyond the first step in a flight. Accommodation of practice stairs is necessary in some areas (e.g., in physiotherapy or on the floor of the unit).

3.5 WALLS

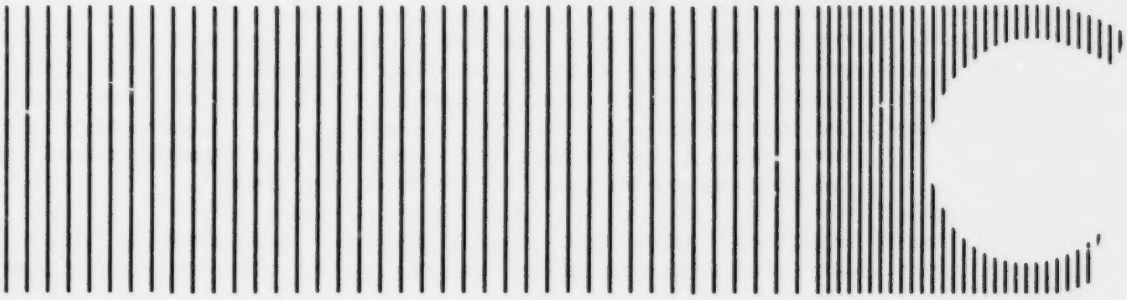
Walls should have wheelchair bumpers since some patients with perceptual problems are prone to running into walls.

3.6 TELEPHONES AND DRINKING FOUNTAINS

- Water fountains and telephones should be accessible to people in wheelchairs. Water fountain rims 860 mms from floor with 690 mms clearance underneath. Telephones should have an amplifier on the receiver, be push button dialing and have at least 915 mms long cords.

- Seating by all telephones should be provided to avoid fatigue.

"THE PATIENT" AS THE FOCUS OF ACTIVITIES



1.1 INTRODUCTION

Admission to the geriatric unit entails a form of confinement with physical and psychological effects; the patient's normal eating and sleeping cycles are disrupted, the physical and social environment is unfamiliar and the freedom to move about at will is restricted. Privacy, as valued as it may be, is all but non-existant in the hospital.

It is important that the patient on arrival is met by an environment conducive to a sense of confidence and hope, as well as comfort.

Functional and operational (staff) efficiency, colour, texture, light, etc., should enhance a "home" atmosphere and downplay the institutional.

The patient's room is a critical area in the geriatric unit and should function as a personal unit for the patient throughout the course of stay. The patient's room is often the only location where he/she can retreat to be alone and private. The design and layout of the room should therefore accommodate a diverse range of personal and private activities as well as providing for sleeping and display and storage of personal items.

Often the design of the patient's room seems to be based on the assumption that all patients are bedridden; and fails to provide an alternative location for passive and private activities such as reading or writing. In cases where rooms are shared, provision must be made for some personal and private space adjacent to the sleeping area.

Visitors, both family and friends, can provide not only important and beneficial support for the geriatric patient, but also help the patient maintain close contact with the outside. Preferably, the patient's room should allow for private discussions with visitors. Alternatively, separate private and public areas for receiving visitors should be provided near the patients' rooms. Patients often share visitors with staff and friends. Receiving visitors is often seen as a status symbol, i.e., "someone cares about me."

1.2 SLEEPING

Bed heights should be adjustable. Patients should be able to get in and out of bed easily and independently or have the head portion of the bed lifted to allow them to sit in bed. A low adjustment should allow a small person to get out of bed easily. It also reduces the distance to fall in case it happens. It is important to know that there are currently no hospital type beds made by manufacturers, that can be adjusted low enough.

If adjustable beds cannot be afforded, lower hospital beds must be available. In most cases bedrails should not be used unless they are necessary for patient's safety. Bedroom design should allow rearrangement of bed position for the patient's comfort. A personal storage unit should be provided next to the patient's bed as well, as a shelf for displaying personal items. The shelf should be designed with a raised ledge that prevents solid objects from falling off it. Adequate task lighting should also be provided at the bed.[5]

1.3 LEISURE

As most of these activities occur in a sitting position, a comfortable armchair with easily adjustable height should be provided for every patient. This type of chair should have the following features: a reclining vertical back, padded seat and backrest, it should be stable and light to move, and it should be of a design that makes it easy for the patient to get in and out.

For reading purposes, natural and artificial lighting levels should be appropriately provided for this chair. When patient rooms are used for visiting, the room should accommodate both patient and visitors so that they are able

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5 For more information about lighting, the reader can refer to: Illuminating Engineering Society (I.E.S.) Lighting Handbook 1981 (or latest edition) on Lighting Applications.

to sit comfortably and talk. A minimum of two chairs per bed in addition to the patient's chair is convenient. Visitors' chairs could be kept in the room or in an adjacent space.

Windows in the patient's rooms should overlook a pleasant view or some active areas. They should be low enough to allow a view of the outside in a seated position, whether on a chair or in a wheelchair.

Reality orientation could be enhanced by providing space on walls where patients could post calendars, pictures and other reminders. Also counters and cupboards should be provided for the display and safekeeping of items of a personal nature.

1.4 EATING IN BED

Eating in bed does not provide an opportunity for the elderly patient to move out of the room and socialize with other patients. However for cases where patients mobility is limited, an overbed table equipped with a wheels-locking device should be provided. This overbed table should not necessarily be permanently left or stored in the room.

In some instances overbed tables which serve as mini-dressing tables are provided. They usually have an appropriate storage area for hairdressing and facial care. They also provide a working surface for other activities such as playing cards and writing. They should accommodate coffee cups locators, and could be adjusted to chairs heights especially for wheelchair patients for whom it would serve as a vanity.

In rooms with more than one bed, curtains between beds must be provided to allow a patient visual privacy when visitors to the other patient are in the room, and also to allow privacy from the other resident when desired.

A recent study suggested that even by creating an "invisible" room division with tape on the floor, improvement resulted in the social behaviour of residents sharing rooms.

1.5 PERSONAL APPEARANCE

Personal appearance is an important consideration for the enhancement of the elderly patient's self-image. It can be promoted by providing counter space to place articles while toileting, full height mirrors in the bedroom and as mentioned before, vanities specially designed for use by wheelchair patients.

In a multiple-bed room it should be possible for each patient to have his or her particular shelf or cabinet for personal toilet items. This is usually provided in the vanity or next to the bed. Also areas for storage of soiled clothes should be provided, preferably in the bathroom. The design and arrangement of space must allow for the free movement in the rooms and for the use of saska poles in two locations in the bedroom.

2.1 ORIENTATION

2.1.1 Sensory and Motor Changes in the Elderly Related to Orientation

One mark of a well-designed facility is the ease with which people can orient themselves within and around the premises. Confusing and poorly displayed information is an unnecessary additional source of stress and frustration for users who are unfamiliar with the building.

The essence of good orientation is the simplicity and clarity of the information conveyed, especially in view of the reduced ability to differentiate usually common between older people. It should be uncluttered, and free of irrelevant details. Orientational aids such as signage systems should be designed based on the sensory and motor capabilities characteristics of the elderly patients.

The sensory and motor changes accompanying aging which orientation systems must address are:

*- reduced distance vision,

*- increased sensitivity to glare,

*- reduced peripheral vision,

*- reduced ability to adjust to changes in lighting levels,

*- reduced ability to discriminate fine detail and embedded figures,

- reduced ability to discriminate certain colours and cues,

- reduced speed in decision making,

- reduced ability to retrieve information quickly and filter irrelevant details.

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* These refer to item 1.2(i) page 2

An appropriately designed signage system aids and encourages voluntary ambulation since:

- the ambulatory patients will be able to move about the unit confident of being able to find their way back to their room;

- the patients can independently make their way to social or activity areas at their own discretion and speed rather than being forced to call, impose and wait upon staff schedules.

Conversely, a poorly and inappropriately signed unit which causes confusion and disorientation magnifies any feelings of incompetence and serves to encourage the patient to remain safe in his or her room.

2.1.2 Design Considerations Related to Orientation

In this respect, many considerations that often seem minor to planners of geriatric facilities have a remarkable impact on the users. For example, aside from the visual emphasis placed on signage, the architect could use sound, touch and even smell to convey to patients a clue on where they are located in a building, also landmarks such as plants and objects could be used to alert the patients to their location.

Signage should be large enough for patients with visual deficiences, and at level between wheelchair and standing height (910-1320 mms). It should not rely only on the written expression, it could take various other forms: symbols, drawings coloured marks on the floors etc. When lettering is used on signs it should be in large typography (minimum 40 mms high letters) preferably Helvetica.

Signage systems with high contrast between symbol and background should be used, preferably white on a dark or black background. Use pictorial representations when possible and/or familiar signage and symbols. Bold bright non-glare colours and/or textures could be used to mark entrances, exits, merging of corridors, steps, approaches to elevators, ramps and other changes in level of flooring surfaces.

Signs should be located in such a way as to allow decision-making which does not require speed, i.e. place important signs and information in positions which will allow self paced examination. Competing information situations that would be distracting should be avoided and repetition of information is advised particularly directional signs that may be forgotten as an elderly person moves from one area to another.

Large numbers should be located on each floor opposite the elevator door to be seen when the door opens. It often happens that patients using the elevator cannot see the small digits indicating the floor in the elevator's floor indicator panel. It is recommended that elevator control panels with floor designation be provided at the left of the floor control button in raised Arabic characters which fit under the ball of the finger (13 mm to 18 mm). Door casings on all floors should have the floor marked by raised Arabic numerals and braille symbols on both sides of the door casing at a height of 1250 mms above floor level. Large numbers and names should be located on walls beside patient rooms doors. They should not be placed on doors, since doors are often kept open. (CNIB recommends 12 cms to the latch side of the door, 1520 mms from the ground).

Cues

Distance cues to entrances and stairways should be used.

Tactile cues could be used, such as shape-coded handrails and changes in wall textures.

Colour cues could consist of using different colour in different patients rooms and on exterior of doors for ease of identification of areas as well as to develop a sense of place.

For landmarks and objects contrasting colours are recommended. Colour is at its maximum with orange, yellow and light greens.

Use multidimensional signals combining visual, auditory and possible tactile cues.

As orientation does not rely only on directional signage or cues, reality orientation aids such as notice boards, 12-hour clocks, calendars and notices of events should also be

considered. In general, visual and colour cues (colour coding, colour patterns) increase recognition of spaces. Picture symbols should be used in combination with other signage techniques and cues to achieve the main goal of giving patients the independence they need when moving around within the unit and later on when they return home.

2.2 COMFORT AND SAFETY

All the tenets of good design which afford personal safety also apply in the design of a geriatric unit. In addition, it is particularly important to consider the mobility, agility and balance problems as well as the physical changes which accompany the aging process. The safety features built into the design of the unit should not only guard against the possibility of accidental injury, it must also afford patients a sense of confidence that they can in fact negotiate the space, balance and mobility problems not withstanding. Again, a safe design contributes to our feelings of environmental competence.

Many of the physical changes characteristic of aging which need to be addressed in the design of the orientational systems also need to be considered for the personal safety of the patient. For example, the increased sensitivity to glare will cause visual discomfort and perceptual problems which may result in accidents. Therefore, highly polished or painted shiny surfaces and those which reflect glare should be avoided.

Safety in the design of geriatric units covers a wide range of areas: barrier-free access, safe floors, warning systems, fire protection, etc. For more discussions on this subject the reader could refer to the complement section on adult long term care institutions."[6] The following section should be considered as a general overview of design considerations related to safety.

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6 For additional safety features see appendix VII of the guidelines for Establishing Standards for Special Services, "Adult Long Term Institutional Care," prepared by Health Services Directorate, Health Services and Promotion Branch, Department of National Health and Welfare.

2.2.1 Barrier-Free Access

Although most geriatric patients are brought into the hospital by car, visitors to these patients could be elderly persons who use public transportation.

Walkways between building entrances and adjacent public transportation stops should be barrier-free. Special attention should be given to curb stops and ramps.[7] They should be easily identifiable by visually impaired people; a special texture to the ramp or slope could help distinguish it from the surrounding area. The degree of slant should be such that independent wheelchair users can manipulate their own maneuvers. Curb slopes should be in the same location at every corner.

When patients arrive at the hospital, adequate, clear signage should assist them in reaching the ward. At the main entrance of the hospital the doors which are part of glass curtain walls must be clearly marked and the surrounding glass areas should be marked with stripes. These doors should be light enough so that they are not difficult for a weak person to open. They also can be automatic with slow time-phase. Entrance areas to the building should be designed for the visual difficulties of the elderly in that they should allow for slower adaptation to the dark.

Once inside the building, a barrier free environment should be promoted by the use of tactile cues and other design features.

The CNIB[8] for instance, recommends a change in the texture of the floor 2740 mms in advance of floor level changes or stairways. At the elevators the opening and closing of doors should allow a slow passage of the person with low mobility in wheelchair.

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7 For more details see CMHC publication Housing the Elderly.

8 CNIB. Canadian National Institute for the Blind.

Steps and changes of levels should be avoided and easily grasped handrails, preferably round, which allow a strong firm grip should be provided along walls, ramps and stairs. Lighting should be used to accentuate stairs, handrails, etc.

In corridors and passageways, protrusions from walls and freestanding objects should be avoided. It is recommended to include built-in recesses for medicine carts and other frequently used equipment to keep them out of passageways. Also hazardous objects must be removed from travel paths and not project into such spaces lower than 2030 mms from the floor.

Tactile warning signals should be used when a hazard cannot be eliminated or where there may be an unexpected object. a) signals should be raised from the surface, groved into it, or provided with a change in hardness. b) they should be placed 2740 mms in advance.

2.2.2 Floors

Carpets could be used in certain areas, however, carpeting may create problems for people in wheelchairs and for those with visual problems who rely on sound from floor surfaces. Throughout the hospital the use of non-glare, non-slip flooring with maximum noise absorption is recommended.

Large coloured patterns and stripes on floors should be avoided as they could be perceived as holes. Changes in colours on floors may create perception problems for stroke patients, although such colour coding may be important to patients with limited vision. These types of problems should be considered when deciding on types, colours and patterns of flooring for geriatric units.

2.2.3 Glare

The elderly not only require more light to see details clearly, they are also more sensitive to glare from light sources, floors, walls and glass areas. Glare from these points not only causes increased discomfort but also poses a potential threat to the patient's safety. Some of the comon sources of glare are from high horizontal windows, surfaces painted with glossy finishes, and long corridors which are end-lit.

The older eye takes longer to adjust to changes in lighting levels. This delayed adjustment is most acute when the patient moves from a dark to a brightly lighted zone or vice versa. Such obvious and even less dramatic contrasts should be avoided for safety reasons.

Glare from windows can be effectively reduced with shading devices such as venetian blinds or curtains, brise-soleil or awnings which do not impede the view, or blinds in between two layers of glass. Venetian blinds have the added advantage of being relatively easy to clean and inexpensive to install. Glare in corridors can be reduced with the use of indirect lighting and non-glare surfaces.

The placement, size and shape of windows should also be used to reduce the amount of glare in all patient-oriented areas. Since the distribution of light is affected by the reflecting properties of the surfaces in the room, special care must be taken in selecting floor and wall finishes (colour & texture).

2.2.4 Security Alarms

Confused patients are sometimes inclined to wander off alone out of the building without authorization. A special door alarm system consisting of electronic surveillance door switches may be connected into the nurses' call system or to a separate alarm and annunciator panel located either at the nurses' station or at the telephone switchboard room. This will alert supervisory personnel when a door to the outside is opened without prior permission and will indicate on the annunciator panel the specific door being opened. The door switches may be turned on and off by a master control switch either manually or automatically to follow prescribed time periods.

2.2.5 Fire Alarms

Fire and smoke present a greater hazard to elderly than to other patients in the hospital because of a potential reduction in physical and mental response in emergency situations, thus a greater vulnerability. It is most important therefore, that a reliable and effective fire detection and alarm system be provided so that prompt forewarning during

the incipient stage of a fire will provide a real chance of survival for persons who could not escape the danger unaided.

It is recommended therefore, that an electronically supervised, non-coded fire detection and alarm system be provided. Such a system would incorporate ionization type smoke detectors, manually operated fire alarm stations, rate of rise heat detectors, audible chimes and a fire alarm control and annunciator panel. The control and annunciator panel which indicates the general area from which a detection device or alarm station has been signalled should be installed at the nurses' station and in the telephone switchboard room. The system shall comply with the requirements of section 32, C.S.A. Canadian Electrical Code, Part 1, standard C22.1-1975.

Manual fire alarm stations shall be installed near all exits from the geriatric unit. Ionization type smoke detectors shall be installed in the patient rooms, corridors, physical and occupational therapy areas, chapel, recreation area and dining area. All remaining areas such as administrative, utility, janitor's closets, barber and beautician, kitchen, etc., may be either provided with rate of rise heat detectors or sprinklers. Audible devices used to sound alarms in the geriatric unit shall be chimes and shall be of sufficient volume to warn all staff members wherever they may be in the course of their duties.

If sprinklers are used in some of the above mentioned areas, the sprinkler system shall be connected to the fire alarm control panel through a waterflow or pressure switch so that in the event that a sprinkler head is discharged, the fire alarm system will be activated.

The fire alarm system for a geriatric unit shall be integrated with the main hospital's fire detection and alarm system.

2.2.6 Electric Snow Melting

In areas where freezing temperatures and high snowfall conditions are frequently present, it may be advisable to keep exposed ramps, walkways and stairs leading to various exits and entrances of the geriatric unit clear of ice and snow.

This may be conveniently done with the installation of electric heating cables in the pavement during its construction. The system should be designed for intermittent operation, i.e. it would operate only when snowfall or other conditions causing ice on patient traffic surfaces actually occurs. Clean and dry pedestrian areas during winter would provide a high element of safety for the elderly patient who is often physically disabled and not able to negotiate slippery or snow covered walkways or stairs, and would encourage residents to enjoy the outdoor areas around their facility.

2.2.7 Other Design Considerations Regarding Safety

- For the improved mobility and safety of patients, opening devices provided should not require physical strength or rotating wrist motions.

- Switches and controls should be within reach of wheelchairs and clearly marked so that they stand out from the background. The control function of the device should be easily understood. Tilt switches should be provided for lights at W/C patients level.

- Monochromatic colour schemes should be avoided. Instead, bold contrasting colours should be used on doors, frames, latches, knobs, switches, bathroom fixtures, etc.

- The patient should be able to distinguish these items easily from background areas.

- Regarding steps of stairs, it is advisable to indicate the height of risers (the vertical part of a step) in a contrasting colour to assist patients with visual problems. Given the high incidence of colour deficiencies in the elderly, yellow stripes on stair risers are recommended.

- Attention should also be given to the fire-retardant quality of residents clothing, bed linens and covers, and drapes in order to increase patient's safety.

- Lights concealed underneath handrails of stairs, would assist in avoiding accidental falls to the patient by clearly indicating details of steps and a differentiation between horizontal and vertical surface of each step.

3.1 SOCIAL ACTIVITIES

3.1.1 Introduction

Planning the physical environment of social activity areas requires the consideration of the older person's interaction with that surrounding environment. There are several major adjustments that a resident must make when entering a long term care facility. First of all the resident moves from a small intimate group of well known friends and acquaintances to a large group of relative strangers. This can be disturbing for any age group but is particularly so for the older person whose deteriorating physical and/or mental abilities are often the reason for the change of residence. Secondly, the resident moves from a known and defined personal space to common spaces that are shared by staff, residents and visitors alike. Thirdly, the resident must exchange a small well defined personal territory, for a larger territory with unknown spaces that must be navigated. These activities can be confusing when eyesight, hearing, gait and comprehension may be weakened. Finally, the resident moves from a situation where he/she is defined as an individual to a setting where for many activities the resident is defined as part of a group.

It is essential that the above observations are considered when planning the physical facilities for social interaction.

Regarding the social activities involving an interaction of the patient with other people, six main subdivisions should be identified:

(a) Common eating activities.
(b) Private communication activities (relatives visits, private talks).
(c) Quiet group activities (public lounges, reading areas etc.).
(d) Noisy group activities (singing, television, music).
(e) Leisure activities (bridge, pool tables etc.).
(f) Outdoor activities (planting, flower growing, walk, etc.).

The incorporation of the total above mentioned activities in the unit would promote rehabilitation and independence, however, if trade-offs have to be made due to space

limitations, (e) and (f) are not always considered mandatory in the geriatric unit itself, due to the assumption that patients are not here to stay, they are here to be treated and leave to other residential institutions or home.

Items (c) and (d) need not necessarily be provided in the unit but could be shared with other wards on the same floor. However, displacement of patient out of area usually discourages his/her use of these facilities.

Items (a) and (b) however, are mandatory for a geriatric unit in a hospital.

3.1.2 Common Eating

3.1.2.1 General

Main dining rooms in hospitals where patients from various wards could have their meals are not common in most acute care hospitals. Usually these so called cafeteria type areas are mostly for the use of staff and visitors while patients eat in their rooms. Dining provides the geriatric patient, a valuable opportunity to normalize an otherwise foreign or institutional routine. Therefore, a dining room should be provided in the unit or adjacent to it. The opportunity to dine with family members of other patients should therefore be considered a beneficial social activity. However, the freedom of having some choice to either eat alone or in company should be preserved.

Also applicable to all social areas is the importance of providing a "preview" window or opening into social areas for two reasons:

(a) to orient the residents to activities inside,
(b) to allow residents a decision on whether to mix or not with the particular group using the facility at the time.

Patients should have the freedom to choose their preferred seating in the dining area, and, it is not unusual to have patients choose a seat and keep it during their stay, thus allowing for the observance of special diets and other dietary control measures by the staff. However, extra seats should be provided for relatives sharing meals with the patient or sitting with them while eating. Eating should be considered as one of the most personal and pleasurable of our daily activities, even more so for a lonely resident.

3.1.2.2 Location

To encourage patients to take their meals in the dining room, dining areas should be located in close proximity to resident's rooms to cut down on distances to be travelled by residents. Residents take more pride in their personal appearance when interacting with others. In larger facilities the dining area should be subdivided into smaller areas of not more than 50 place settings to create more appropriate social settings. These could be further subdivided by

screens panels or planters. The smaller group settings help to create intimate groups that will allow privacy for those patients who have difficulty in eating or who need assistance with meals.

Grouping of tables and chairs should be flexible in order to accommodate a variety of seating arrangements. Sufficient space between tables must be allowed for wheelchair residents so that they are not segregated in one area. Whenever possible, the dining areas should be situated in a location that receives daylight. While additional lighting will be needed for dark days and evening meals, daylight increases the resident's sense of reality as in the ordinary home setting. Where the dining areas are located next to windows, see-through drapes should be in place to reduce glare when this is necessary. It should also be remembered that a considerable amount of heat is generated by the sun and that if large unprotected windows are present, the dining room may become uncomfortably hot on sunny days. Special glazing and/or appropriate orientation or exterior plants would help in providing a more salubrious effect, also the provision of adequate overhang on roof will reduce direct sunlight and cut use of drapes. Heat can also be a problem when kitchens are located next to the dining areas and heat generated from cooking is allowed to spill over into the dining area.

While daylight is preferable in the dining areas, the location of these areas should not be at the expense of the lounge areas, where a view of the outside is more important as residents will spend considerably more time in these areas than in the dining areas.

3.1.2.3 Services

Whenever possible, the time schedule for meals should be flexible, and residents should have a choice of menu. The opportunity to decide when to eat and what to eat will help the resident to preserve his/her identity as an individual. In many facilities tables are cleaned and laid for the next meal immediately after a meal is finished. However, if due to space restrictions, the dining room is used as a multi-function area between meals, its prime function as a dining

activity area should be preserved. In general, any rule/ policy that is established for the convenience of staff must be questioned.

3.1.2.4 Furniture

The design of eating rooms should include green plants, interior landscaping, esthetic functional features, stable comfortable furniture, well-leveled floors to avoid shaking tables, eating tables which allow wheelchairs, space under the table for legs without protruding elements, a seating arrangement which allows comfortable eating. There should be easy circulation between tables by serving staff, and elimination of obstacles which can cause spilling of food on patients. Long tables with seats on both sides should not be used as they are very institutional and do not foster group identification and interaction.

Tables must be stable and should have raised borders to accommodate spills. Chairs should be comfortable and not easily tipped, supportive with padded backs and seats and should have telescopic legs. Non recliner chairs should also be provided for patients who need them. All furniture should be washable as spills can occur. Colours should be restful to the eye and should resemble usual home furnishing colours, where possible. Patterned and striped material should not be used as it can cause confusion for a resident with limited vision. Some colour contrast is recommended between chair coverings and floor coverings for those with visual impairment. The same applies to dishes used on table cloths or mats. Studies have shown that the use of table-cloths and serviettes have caused a change in patient's behaviour.

3.1.2.5 Floors

The floor of the dining area should be of a washable, non-slip, non-glare finish. Patterned surfaces should be avoided as this can be confusing to residents with poor vision. Within these restrictions, floor coverings should not look too institutional as residents do not need to be constantly re-minded that they may spill things from time to time.

3.1.2.6 Communication Systems

Use of the communication system should be avoided whenever possible, particularly during meal times. Constant interruptions and trying to listen to messages and announcements are distracting and disorienting at any time. Background music in communication systems should not be used as meal times are an opportunity for residents to talk to each other and this is difficult if music is playing, especially for the hard of hearing. In general, when background music is desired it should be personal or as an activity. Noise from kitchen activities can also be distracting. In order to reduce noise level, walls and ceilings of social interaction areas should be made of sound absorbing material.

3.1.2.7 Interior Decoration

The use of boldly patterned wallpaper should be avoided as it can confuse those with poor vision and it may not be pleasing to everyone's taste. A clock hung on the dining room wall serves as a good orientation device. Pictures should be restful and in keeping with the resident's ethno-cultural background. Whereas, large modern murals and pictures may be pleasing to staff, they may not appeal to the older residents and may have negative effect on the resident's appetite. Plastic tablecloths not only cause glare problems, but should not be used as they have the effect of reducing the residents to the level of children. If artificial flowers are used to decorate tables, they should be changed before they become dusty or faded.

3.1.2.8 Lighting

Direct lighting is important as residents must be able to see what they are eating. Lighting should be such that it does not produce shadows and should be shaded to reduce glare. A dimmer switch would be helpful if the room is to be used for other purposes[9]. Warm light is recommended, cold fluorescent or HP sodium should be avoided.

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[9] More information is available in Section on Lighting Design, pages: 14-15-16.

3.1.2.9 Ventilation and Plumbing

In geriatric units in hospitals, central kitchens usually cater for all types of wards. When central kitchens are employed, a food delivery system may be used or a satellite mini-kitchen installed in each unit. However, in cases where the majority of patient wards are for geriatric care and kitchen happens to be adjacent to the units, it should be well ventilated to keep food smells out of the facility when meals are being prepared.

Ventilation or air-conditioning should be provided at the rate of a total 4 air changes per hour. Also a special manually controlled exhaust fan is recommended if a hot plate is used.

Flexible connections of equipment and plumbing fixtures should be considered so that the height of the fixture and equipment can be adjusted from the floor during evaluation exercises for normal and wheelchair patients.

Kitchenettes should have a double stainless steel sink.

Hot and cold water supply and thermostatic mixer should be equipped with shut-off valves located under the sink.

All faucets should be equipped with lever or wrist control handles.

3.1.3 Private Communication

For more privacy, and for cases where a number of visitors cannot be received in the patients rooms, separate visiting rooms should be provided in the unit. They should be soundproof, not necessarily with sophisticated soundproofing devices, but good enough to allow talking without being heard across the partition or in the corridor with the door closed.

Lighting, colours and furniture should be conducive to relaxed talking.

Private conversation areas should be placed in quiet areas of the unit away from high activity areas and preferably where there is a view. The seating arrangements should be

intimate without being crowded and should be large enough to accommodate a wheelchair. These areas become more important if bedrooms must be shared.

3.1.4 Recreation and Leisure: Quiet Group Activities

Many of the activities taking place in the lounges will be of a social interaction nature. Some residents will also engage in sedentary hobbies such as knitting, reading and card playing. While designated areas for occupational therapy may be set aside, it is important that residents be allowed to continue the activities that they would normally carry out in their own lounges at home. If a resident has no other choice than to go to another area in order to play a game of cribbage with a friend, he/she may delay the activity thereby foregoing the benefits derived from it.

Also, many such activities are more enjoyable if they can be done while sitting in a favourite armchair. The essential point is that the lounge space allows for a mix of quiet passive activities.

Visitors and volunteers will also use the lounge areas. Their ability to bring the outside world into the facility is an important factor in keeping residents in touch with the community at large. As many visitors and relatives will be older persons themselves, comfortable seating should be provided at the coat and boot stands. These should be in sight of the lounge for security reasons. It often happens if coat racks are not provided that valuable seating space may be used for coats. Washrooms for visitors and patients should be close to the lounges.

While visitors should be encouraged, they should not be allowed to dominate the lounge areas. Staff should be able to divide larger groups into smaller private areas so that other residents do not feel that their territory (home) is being invaded. Lounge areas for staff should be available, possibly by providing armchairs in the staff dining rooms.

3.1.4.1 Location

Lounge areas should be located in areas where there is a view to the outside. The opportunity for the resident to see everyday activities of the outside world taking place is an

important factor in helping to retain the resident's sense of reality. Use of a solarium with greenery would enhance the value of this space in the winter as well as provide a potential hobby space. Lounge areas should be close to residents' rooms so that it is easier for them to move between the two areas and use their own washrooms.

While it may be necessary to have a large lounge for residents and visitors, it should be subdivided into smaller components by the use of bookcases, dividers and planters. This allows for smaller more intimate groupings that encourage social interaction while at the same time giving a feeling of privacy. It also allows for a more desirable range of patient activities to occur.

Whenever arrangements are made for seating, a sufficient number of seats must be available for residents, visitors and volunteers. Residents often lay claim to one particular chair and can become disturbed if it is occupied by another person. In a study of 17 English old folk's homes, Lipman found that over 90% of those who regularly sat in public places occupied the same chairs in the same positions each day.[10] This particularly applies where bedrooms must be shared with other residents.

3.1.4.2 Furniture

Comfortable armchairs, easily adaptable to a variety of heights and positions should be available. Lighter chairs should also be available so that a small group of fixed furniture can be enlarged to include friends, staff or volunteers. Coffee tables should be higher than normal in order to accommodate wheelchair residents and to ensure that other residents do not have to stoop down to reach the tables. Tables should be stable but moveable, to give flexibility in seating arrangements. Table corners should be rounded off to avoid accidents if a resident stumbles. All furniture should be washable. Where possible, small fixed units of

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10 Sommer, R., Small group ecology in institutions for the elderly, in Pastalan, L.A., Carson D.M. (eds) Spatial Behaviour of Older People, Ann Arbor, University of Michigan, 1970, pp 29, 34.

shelves should be placed between furniture for residents to put away personal belongings such as purses, tissues, etc., without using seat or table space for these items.

3.1.4.3 Communication Systems

Use of the p.a. system should be reserved for important announcements or eliminated if possible. Background music in these systems should not be used as it is confusing to residents with hearing problems and tends to inhibit conversation.

3.1.4.4 Interior Decoration

(see dining areas) It should be remembered that the facility is the resident's home, and that while furnishings have to be functional, every attempt should be made to create a home-like atmosphere (people do not want to spend their leisure time in a place that resembles a commercial establishment). Planning the decor should be carried out with the resident's council.

Floor spaces should be kept clear of unstable items such as floor lamps or light plant holders; residents may trip over these items or hold onto them for balance when moving about the room. Sufficient space between furniture should be allowed for walkers and wheelchairs.

3.1.4.5 Lighting

While lighting should be restful, sufficient task light should be available for such activities as reading. This may be accomplished by reading lights fixed on the wall or fixed to the furniture and should be accessible for adjustment by the resident. Care must be taken to place them away from a position where the resident could hit his/her head on the light when rising from the chair.

3.1.4.6 Ventilation and Plumbing

Ventilation or air conditioning should be provided at the rate of up to 4 changes per hour.

Heights of toilets, washbasins and drinking fountains should accommodate wheelchair users.

3.1.5 Recreation and Leisure: Noisy Group Activities

These areas should be separated from the quiet lounge areas to avoid conflicts and disturbances between patients who wish to read or talk while others watch television.

TV, recorded music or musical instruments should be available in a separate area. It is mostly in long stay institutions that the problem of incompatible activities is accentuated. In geriatric units in hospitals, the small quiet lounge areas could have a separate extension into a TV and music area. Hearing devices, earphones, etc., should not be considered as alternative solutions for the elderly needs to whom in many cases such devices are not adapted.

If it is impossible to provide both areas, and a TV is installed in the lounge area, other small quiet conversation and rest areas along travelways could be provided.

Large TV screens could be used (1830 mms) with teaching cassette capabilities and special receiver-amplifiers for TV and radio well adapted to hearing levels of the elderly.

In general, noise reduction can be achieved by:

- dampering through use of fire rated baffling materials such as wall hangings or thickly woven fabrics.
- using of screens, banners or panels that reduce reflection of sound from ceiling surfaces. (Koncelik, 1976)
- using non-flammable heavily textured surfaces which can be sprayed on to reduce sound reflection from walls and ceilings.

3.1.6 Recreation and Leisure: Other Leisure Activities

It is not uncommon to find card game fans among the elderly. Cards playing and other pastime games could have a specially allocated room or they could be suitably accommodated in the quiet lounge area. The advantage of having

them combined in the quiet lounge area is the possibility for some patients to first view the games and then eventually decide to participate in them.

In some cases, this area could be combined as an occupational therapy area for geriatric patients. This only applies if O.T. involves portable, time limited activity. Otherwise, patients will be discouraged by having to set up and take down their work all the time.

Table heights should accommodate wheelchair patients.[11]

Lighting is important to consider for patients with reduced visual capacity. It must be adjustable in intensity and direction. Task lighting is recommended.

Smoking and non-smoking sections should be provided. Designated smoking sections allow staff to keep an eye on those who are smoking, as elderly smokers often present a fire hazard.

3.1.7 Recreation and Leisure: Outdoor Activities

Patients in a geriatric unit should also have easy access to outside garden areas and horticultural recreation areas indoors. Colourful sunrooms with raised planters that could be attended from wheelchairs could be provided. Seating arrangements outdoors should allow patients to socialize with others, they should be protected from the sun, wind and rain by the provision of umbrellas or shelters.

Outdoor areas should preferably be self contained courtyards rather than open land on the hospital grounds in order to facilitate supervision by staff. They should allow a safe area for disoriented patients. Access for wheelchairs to these areas is necessary. Pathways should be finished in such a way to allow a smooth and vibration free rolling of

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[11] For more details see C.M.H.C. publication, "Housing the Elderly".

wheelchairs. The landscape should also include balustrades, handrails, or other support devices to assist patients with limited strength and mobility.

The location of the outdoor areas should preferably be a natural extension of the indoor social areas to encourage patients to use these areas. The benefits derived from providing easily accessible outdoor areas are: increased exercise, improved oxygen intake, practical experience at maneuvering in outdoor spaces and raising pets and animals. The outdoor areas should not consist only of landscaped areas, they should also have participation areas where patients can plant or take care of flowers, vegetables, etc.[12] Outdoor areas could also include quiet games such as checkers or shuffleboard, croquet, miniput, etc.

An equipment shed, controlled by the supervising staff should be accessible in order to allow for the choice of equipment which relates to the patient's abilities with regards to its use. Also the control of patients' physical efforts during gardening sessions.

Outdoor areas should also have seating areas for patients and their visitors.

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12 For more information on making gardening accessible to persons with various disabilities the reader could refer to "The easy patn of gardening" published by the Reader's Digest Association and "Gardening for the disabled". Both are available from the Disabled Living Foundation, London, U.K.

3.2 MEDICAL ACTIVITIES

In all types of facilities for the elderly: long term care, intermediate, day hospitals, or geriatric units in hospitals, medical care should be easily accessible from patients' areas and nursing stations.

Medical care related to geriatric patients is not done in isolation by medical professionals. Nurses and other health professionals work in collaboration with physicians in the provision of care.

Medical activities consist of two phases: in the first phase, doctor-patient verbal communication is essential, followed by a fact finding physical examination. Due to this phasing, it is important to consider in the design, two distinct functional areas:

(a) consultation office
(b) examination room.

3.2.1 Consultation

Design and Environmental Considerations

- visual privacy
- soundproofing for privacy
- adjustable light intensity
- adjustable ventilation, heating and cooling
- inoffensive colours
- non-slip floors
- barrier-free environment for patients in wheelchairs and/ or stretchers
- space for family members

Minimum Furniture Requirements

- desk
- telephone
- three armchairs
- filing cabinet
- dictaphone

The seating arrangement should allow the doctor to face the patient, many doctors consider this practice part of the assessment process.

3.2.2 Examination

The same design considerations as recommended for the consultation office apply to this room. If a window is provided, it will need shading and privacy devices for the patient.

This room should have two access doors:

- from the corridor or vestibule,
- from the consultation office.

Treatment could be provided in this room, in which case the area should be large enough to accommodate various treatment equipment. A folding screen would provide a separation between treatment and conversation spaces thus allowing the patient privacy when dressing and undressing. Also there needs to be provision for hand washing in the examination area.

Minimum Equipment Required

- (low) examination table
- oto-ophthalmoscope
- blood pressure measuring instruments
- adjustable spot lamp
- knee operated washbasin
- cabinet for instruments and supplies
- weighing scale
- mobile stool
- mobile raised step
- place for patients' clothes

3.3 NURSING CARE ACTIVITIES

3.3.1 Nursing the Patient

The location of the nursing station in a geriatric unit is vital. It should be central to the patients being cared for. Up to forty patients could be cared for from nursing stations in some instances. However, smaller 25-bed units are desirable.

The number of patients in the unit determines the relative number of nursing personnel working at the station and consequently the number of workstations required. Provision is needed for a quiet area to think while planning for care and charting.

The design and location of the nursing station should ensure easy access to patients, provide a functionally efficient working environment and reduce unnecessary travel time within the unit by the staff. The benefits of a reduction in travel time can accrue to the patient since it affords staff more time to spend with the patient. While the nursing station should have ready access to and view of patient areas, surveillance should not be obtrusive.

Easy access to adequate filing of patients records by staff in charge should be provided. Space should be provided also for typing and stationery for use by staff, documents, forms, scientific references and pinboard for schedules, communication requirements (telephone, etc.). If possible this typing area should not be in the nursing station but adjacent to it.

Call and intercom systems should be located at the nursing stations and be easily accessible to staff.[13]

Heating, cooling, ventilation and security considerations will be the same as those for other patient areas. In addition to special considerations for lighting, it is recommended to

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[13] Additional information is available in section 2.3 page 16: Communication and Signal Systems.

provide the station with adjustable light sources so that nursing staff can work at the station at night without causing over-illumination into patient areas.

The head nurse's office should be enclosed within the station with direct view onto the working areas. This office will be provided with a desk, a filing cabinet, a telephone outlet and a seating capacity of three visitors. Provision for privacy is needed, i.e., curtains, drapes, etc., that can be opened or closed.

The soiled and clean utility rooms should be easily accessible from the station and patient areas.

3.3.2 Medication for the Patient

(a) Within the Unit

The medication room/area should have enough space to contain the medication cabinet and it should also have provision for locked medication. It should be located within the nursing station and be separately enclosed to provide for undisturbed working space. It should allow for the control of the stored drugs and the safekeeping of the patients' medication records and be provided with a working top, a fridge, and all the necessary appliances, e.g., sink, paper towel dispenser, and soap, which would be needed for keeping the prepared drugs safe and unspoiled. It should also have adequate storage space for medication carts.

In addition to the security aspect of this work area, it should be well ventilated and located in a way which prevents heating of the drugs from direct sun exposure. A constant temperature should be maintained within the room. It should be possible to close off the medication room from the open nursing station.

Special considerations should be given to lighting in the medication rooms which should be strong enough in order to prevent errors in the preparation or the dosage of medications.

(b) From the Pharmacy

There is some disagreement recently on medication rooms within care units in hospitals. Some hospital personnel suggest that accreditation standards discourage stock medication rooms, hence unit dose is recommended for all health care facilities. When such a system is adopted dispensing is done at the pharmacy, drug carts with individual drawers for each resident are provided and nurses' time is saved e.g. pre-pouring drugs in medication rooms.

3.3.3 Utility

Soiled and clean utility rooms should be located near the nurses station because they are used only by staff. The equipment and sizing of these rooms is based on the same criteria used in designing acute care facilities.

It should be noted that in the soiled utility room the location of washing facilities and storage should allow a logical work sequence, i.e., flushing rim sink, deep soak sink, drain shelf, and countertop storage unit.

Special storage rooms should be provided for all types of equipment: wheelchairs, commode chairs, etc.

3.3.4 Education of Personnel

Education should be promoted by providing a teaching area for new personnel training, formation of staff and medical education. This area could comprise of one or more classrooms depending on the type of programs offered e.g. student teaching, continuing education, etc.

Ideally each classroom would be an area designated solely for this function. However, in cases of a small hospital with few education courses, one classroom could also serve as a multipurpose room for various education activities such as: conferences, interdisciplinary team meetings, etc. A special room should be provided for meetings with patient's family members and small patients' groups. Classrooms used for this purpose do not provide the adequate atmosphere for positive interactions.

Conference areas should be furnished with adequate furnishings such as modular conference table which could accommodate a seating capacity of two to twelve persons, blackboard, bulletin board, flip-chart stand and no telephone if possible, but with intercom for calling on staff members when need occurs.

Teaching areas should be provided with soundproofing, good ventilation, adjustable lighting and all necessary appliances needed for audio-visual purposes, a rolling screen, an adjustable table for slide projection, etc. Barrier-free access to that area should allow the accommodation of wheelchairs and stretchers.

In cases where the geriatric unit is part of a geriatric hospital a general conference room should be provided which could accommodate a minimum of 2/3 of the total staff. It should have the flexibility to be used as a multipurpose area for other functions (social, recreational). Flexibility in the use of this room will be increased by using seats which can be easily stacked in order to increase the usable space in the room.

In addition to soundproofing, ventilation, and adjustable lighting, this room should have a raised stage which could be dismantled when not in use. Sliding doors and mobile partitions should be provided to allow the subdivision of this large area into smaller rooms. Sound, lighting and audio-visual arrangements should be provided and given the flexibility to adapt to the room's multiple uses.

3.4 OCCUPATIONAL THERAPY ACTIVITIES

3.4.1 Location

The Occupational Therapy department usually serves all wards in a hospital. However, some therapeutic activities are designated for geriatric patients more than others and should preferably be given special consideration regarding their accessibility from the geriatric ward.

In general, the Occupational Therapy department (OT) should be in close proximity to the geriatric unit to allow patients as much independence and responsibility for remembering and attending appointments as possible, especially the mildly confused who are being rehabilitated for home, and who must get frequent regular supervision in the kitchen, etc. Much of occupational therapy in a geriatric setting is geared to improvement in activities of daily living (ADL), self-esteem and independence and can therefore be carried out in the privacy of the patients' room or in meeting and social areas. The unit should include designated rooms for this dual purpose. The O.T. department should be very close to other therapy areas to allow movement of patients back and forth and to promote sharing of professional ideas and goals.

3.4.2 Activities

In this section four activities related to therapy for geriatric patients will be dealt with: the activities of daily living functional assessment (ADL); fitting and/or construction of adapted equipment; light treatment; perceptual testing and treatment of easily distracted patients.

There are other activities related to OT's patients and staff such as workshops, education, meeting rooms, patient and family's counselling rooms, OT staff offices, etc. These activities will probably be available elsewhere in the hospital or shared with other areas in the unit.

3.4.2.1 Activities of Daily Living: Functional Assessment

These activities will include assessment and training of the patient in the use of washrooms, bedroom, kitchen and possibly washer and dryers. The designation of specific

areas for these facilities may be eliminated if they are available as part of the unit such as in a long term care facility; but they are definitely required in day hospitals and in assessment and rehabilitation areas.

ADL assessment should include wheelchair assessment so that each patient may be provided with a wheelchair befitting the patient's condition. OT would take charge of the wheelchair bank and assessments. In conjunction with providing wheelchairs, it would also be necessary to provide cushions such as Rotto, Temperfoam, etc., as an adjunct to the wheelchairs to accommodate patients who are diabetic, frail or arthritic.

An ADL unit should have a complete selection of aids and equipment available for assessment purposes, e.g., raised toilet seats, bilateral rails, bath boards, telephone, shower, etc. Fixed equipment in the kitchen includes fridge, stove, sink and counters. The water closet compartment should be not less than 1670 mms wide and 1820 mms deep; have a door not less than 860 mms wide which slides or swings outward; have a grab rail on one wall 760 mms high and 38 mms in outside diameter with 38 mms clearance from the wall and have the toilets centre line 450 mms from the wall with grab bar and seat 380 mms - 460 mms from the finished floor.

While permitting assessment and independence, ADL units should be similar as much as possible both in design and furnishings to the facilities that most patients will be using - whether on the long term care ward or in the community to ensure a carry over of learning and training. For example, a standard tub similar to a home-style tub rather than a raised assist tub.

3.4.2.2 Fitting and/or Construction of Adapted Equipment

Day hospitals, acute and middle care units will require more extensive splinting facilities than long term care units.

Equipment for splinting requires a great deal of small electrical appliances such as toaster oven, heat gun, and hydrocolator. The type of oven depends on the population and goals.

If making insoles or using polypropoleines, a grinder with dust collector is needed. Also an exhaust hood for fumes may be needed.

3.4.2.3 Light Treatment

Activities of light treatment could be done individually or in a group. The area for these activities should be well lighted and flexible enough to allow a multiple use. Traffic patterns may make two entrances necessary.

Depending on size of unit, a ceramic kiln may be required. If so it may need its own voltage circuit and have specific installation requirements. A sink with a plaster trap is also needed.

Most other equipment needs no special consideration.

3.4.2.4 Perceptual Testing and Treatment

This is a low stimulus room for the treatment of easily distracted patients, which is sometimes called a "quiet room". It has no special requirements unless two way observation mirror and booth are desired by the users. It could also in many cases be used for interviews. Quiet rooms are also usually found in psychiatric units for segregation of difficult patients.

3.4.3 Furniture

Furniture for treatment areas must all be appropriate for the use of the elderly. Chairs should have arms, be high, firm, full-backed and supportive. Table heights must be adjustable to accommodate wheelchairs. Fire retardant upholstery is recommended.

3.4.4 Communication Systems

It should allow communication, especially emergency communication, between professionals. The system should have "turn off" mechanisms in the quiet room to cut down on distractions. ADL bathroom or even public bathrooms should have "call bells" in case of accident if the possibility exists that patients will be using these bathrooms.

3.5 PHYSICAL THERAPY ACTIVITIES

3.5.1 Planning Considerations

Central physiotherapy departments usually serve all wards in a hospital. Depending on the size of the hospital and the elaborate equipment used in the physiotherapy department, it is usually preferable to have the geriatric patient moved to that department from his/her unit whenever necessary, in order to avoid duplication of expensive equipment. However, some other physiotherapeutic activities could be provided within the geriatric unit.

In order to put the following considerations in perspective a list of areas for central physiotherapy department is presented. The users group, in co-operation with the planners of the facility would choose from this list, depending on their programs and the size and role of their institution, those areas which would be most useful to duplicate within the geriatric unit.

Types of Rooms for Activities Within a Central Physiotherapy Department

1. Foyer
2. Waiting area
3. Restrooms (toilets)
4. Reception office
5. Psychiatrist/Physician offices with adjoining Assessment Room
6. Secretaries' offices
7. Therapists' documentation area (office)
8. Staff common room (lounge, lockers and restroom)
9. Director of Physical Therapy Services' office
10. Clinical conference and education room (classroom)
11. Patient and family counselling room
12. Patient change room, showers and toilets
13. Linen storage and disposal room
14. Janitor's storage room
15. Wheelchair and stretcher parking area
16. Day hospital patient restroom and toilets
17. Treatment cubical area (with therapist assessment rooms)
18. Hydrotherapy room with change rooms and showers
19. Therapeutic pool room

20. Special individual treatment rooms for:
    neurological conditions - stroke recovery
    - Parkinson's disease
    chest conditions
    pain (chronic intractable pain)
21. Resuscitation room
22. Training aids (education) storage
23. Gymnasium
24. Gait training area
25. Volunteers room (lockers, toilets)
26. Equipment storage (ambulatory aids, weights, games, music, etc.)

3.5.2 Location

Whether it is a central physical therapy department or a small auxiliary physical therapy area in the geriatric unit, physical therapy must be located in close proximity to occupational therapy, to speech pathology and if available, to prosthetics and orthotics. Due to their close relationship, it is common for these services to share common facilities such as reception services, waiting area, restrooms, staff lounge, day patient rest area, conference and patient counselling rooms, etc.

3.5.3 Activities

The Physical Therapy Services in the geriatric unit provide treatment programs designed for the elderly and/or disabled. These programs include treatment procedures for the management of neurological disabilities, musculoskeletal disorders, ambulatory problems, soft tissue injuries and general non-specific debilitation from inactivity. In order to restore or preserve function the focus of attention is on the assessment, treatment, and correction of the physical disability, irrespective of the cause.

The following activity areas have been chosen from the list in 3.5.1 as the most relevant to this section regarding elderly patients in the geriatric unit. This does not exclude the importance of the remaining items on the list. However, it would be unrealistic to assume that all the items on the list are essential for a geriatric unit. Duplication of physiotherapy areas must be avoided by careful consideration of the cost effectiveness of this duplication at the planning

stage. For extreme cases of an urgent need to provide similar or equivalent functions within the unit in addition to those provided in the central Physiotherapy Department, cost effectiveness should be seriously considered.

The following areas will be considered for physiotherapy functions adapted to elderly needs:

(1) Teaching (classrooms)
(2) Patient and family counselling
(3) Patient's changing, showers and toilets
(4) Day hospital patient resting
(5) Special individual treatment

3.5.3.1 Teaching

Teaching could occur in the education section as described in 3.3.4 or in a special classroom dedicated for physiotherapy.

For physical therapy teaching purposes, an examination table (high-low) would be necessary for clinical demonstrations to a group of students. In that case, a special storing area should be provided within this room to put the examination table away when other functions are taking place. Special lighting fixtures should allow to spotlight during demonstrations. Also audio-visual accessories should be provided.

The following equipment is recommended:

- chalkboard
- screen for double projection electrically operated over chalkboard
- film projector
- slide projector
- overhead viewing projector
- x-ray view cases - mobile
- microphones - depending on size of room
- VTR equipment with television
- general lighting (min-max)
- telephone and public address
- lecturn with light and remote controls

It would be advantageous to have the (Training Aids) Room adjoining the Clinical, Conference/Education/Board Room, as this would provide storage space for an examination table, much of the projection equipment, VTR tapes, cassette tapes and films, x-ray view cases and extra seating. Also a wash-basin and wheelchair toilet should be provided.

3.5.3.2 Patient and Family Counselling

An atmosphere conducive to private discussion should be created for this room. This can be achieved by including in the design soundproofing, indirect lighting, large colourful pictures, plants, armchairs and small tables. Carpet flooring could enhance the soundproofing and a window will help break the institutional look of this room which could be used for counselling by other disciplines within the unit.

It is essential that all these design features consider the wheelchair patient as a user of this room.

3.5.3.3 Patients' Changing

Patients changing rooms for physiotherapy are usually similar for all patients. However, special considerations should be given to changing rooms designated to geriatric or disabled patients. They should be provided with bench seating and grab bars, full length lockers (to accommodate crutches, canes) and full length mirrors.

The wheelchair patient should have sufficient room to maneuver in change rooms and to move freely from changing to shower or toilet.

For instance, there should be no ledges between shower and change area, toilet doors should open out, faucets should be within easy reach of the seated patient, etc. More detailed information is provided in the section on personal hygiene activities (page 74).

3.5.3.4 Day Hospital Patient Resting

This room provides a rest area for patients spending a complete day undergoing rehabilitation treatment procedures. It should be a tranquil, yet cheerful room, where patients may lie down, recline, or sit to rest between treatment sessions.

Furniture requirements would therefore include: beds (adjustable height, head and foot of bed), curtain tracks and curtains for privacy, reclining chairs and foot stools, other armchairs and rocking chairs, tables, table lamps, drinking fountain (wheelchair height), reading accessories, music accessories, private toilet and washbasin.

3.5.3.5 Special Individual Treatment

The treatment cubicle area is where individual treatment procedures are performed. The patient is assessed by the therapist and treatment modalities selected are based on the assessment outcome.

Usually the treatment cubicle area is an integral part of the Physiotherapy Department. Duplication of treatment cubicles within the geriatric unit, unless strongly justified is not to be considered for various reasons:

- Treatment flow has been found to be more efficient if all equipment is dispensed to the cubicles from a central dispensing area.

- Distance between the central dispensing area and the cubicles must be minimal to avoid frequent moving of delicate instruments.

- Plumbing and electrical requirements would have to be duplicated. However, one should consider within the treatment cubicle area, special cubicles designated for geriatric or disabled patients.

Treatment modalities used in the treatment cubicle area include the following:

- traction - cervical
- traction - lumbar
- suspension therapy
- electrical stimulation
- ultrasound therapy
- biofeedback
- transcutaneous electrical nerve stimulation
- acutherapy
- shortwave diathermy (with extreme caution)
- wax treatment (paraffin bath)

- ultraviolet light therapy (occasionally)
- jobst compression pump
- hot packs
- ice packs

Hot packs and ice packs require preparation and it would be advantageous to have a separate preparation counter area with a double sink for these modalities. A floor drain should be provided for emptying the hot pack machine.

A counter space should be provided in the cubicle treatment utilities area with overhead cupboard and undercounter cupboard for storage of hot pack covers, plastic bag dispensers for ice packs, cleaning materials. For more efficiency, cubicles designated for elderly or disabled should be grouped together but be separated by curtains with ceiling tracks to allow privacy for patients or in other instances curtains may be drawn back to permit therapist supervision of two or three patients at one time. Curtains should be non-inflammable heavy duty cotton, bright, cheery and colour co-ordinated.

Treatment tables (plinths) should preferably be height adjustable, otherwise portable step-up stools are required. Wall clocks are necessary in treatment cubicles of physiotherapy departments.

In some cases special treatment rooms may be provided within the unit, e.g., stroke treatment or chest conditions.

The stroke treatment room would require a low treatment table 1210 mms x 2430 mms, hinged to one wall, so that when it is unhinged for treatment, it is 480 mms from the floor. This platform is usually heavy and secure hinging to the wall is absolutely essential. Sufficient room should be provided around it for wheelchair maneuverability following treatment. The exercise mat may be hung on another wall by a pair of hooks. Also, provide wall bars (lowest bar 100 mms from the floor), a regular chair, small table, etc.

For chest conditions, a hydraulically operated treatment table with tilt capability and breathing gap is necessary.

With regard to resuscitation in a geriatric unit, careful consideraton should be given to the possibility of having a

shared room for stroke treatment, chest and resuscitation. In that case, the room should have all the necessary emergency supplies for cardiac arrest, easily accessible oxygen, defibrillators, electrical outlets, washbasin, sink, etc.

However, the difficulty of having a "shared room" is when an emergency does arise and you may have a patient being treated in the room on that floor. The argument in support of a separate room for emergency crashcart supplies mentions some of the advantages: avoids confusion, lack of privacy and alarm in elderly patients when an emergency does arise.

3.6 PERSONAL ACTIVITIES

3.6.1 Spiritual Activities

3.6.1.1 Location

A non-denominational chapel should be located in a central area close to resident rooms.

3.6.1.2 Activities

The chapel should serve two basic functions, i.e., to hold services for large groups and to be a quiet place for meditation and prayer for individuals.

3.6.1.3 Users

The chapel will be used by all religious denominations to hold services in the facility and also by residents, staff and families for religious services, remembrance services and for prayer and meditation.

3.6.1.4 Furniture

A central table or altar will be required for holding vessels used in the service. Comfortable seats will also be required. Depending on the size and nature of the facility, sliding doors could be used to enlarge the chapel for larger services. Space used for recreational or dining activities could become part of the chapel when required. For day to day use the chapel should remain small and intimate. Wheelchair accommodation is necessary. Religious leaders may wish to leave prayer books and other items in the facility and would require a cupboard for these items. If music is required a piano or organ would need to be moved from another area and portability should be a factor when choosing these items.

A chaplain's office is required in or adjacent to the geriatric unit. Usually the chaplain's office is used by pastors of different religious denominations.

3.6.1.5 Interior Decoration

The chapel should be decorated in subdued colours that contribute to a peaceful environment. However the fact that the average elderly person loses the ability to discern colours would suggest the use of colours which are contrasting enough without being too bold.

Residents of all religious denominations should be able to relate to the surroundings, therefore, care sould be taken not to include specific religious symbols such as the crucifix or others as ornament features. On the other hand, too bland and "inoffensive" environment will make the chapel cease to serve its purpose.

3.6.2 Personal Hygiene Activities

Although bathing can be considered in many instances a personal activity, many geriatric patients need special assistance for their bathing. Books have been written on the design of bathrooms for elderly and disabled persons dealing with the special features required in these rooms.

During the review of this subject, conflicting views were obtained, both from written articles and guidelines as well as from discussions with staff and patients. The following considerations present an overview of the various alternatives and are not intended as minimum design requirements for geriatric units in hospitals. The users and planners of facilities will have to decide upon the most suitable bathing facilities for their unit and programs.

In designing bathing facilities for geriatric units, one is immediately faced with the problem of designing facilities to serve patients with a wide range of disabilities. Although a large number of geriatric residents will require bathing assistance, it is desirable that a bathing facility with appropriate mechanical assists is also provided in a domestic setting to enable residents to bathe in privacy and with independence where possible.

In the following section, the activity related considerations will cover four types of bathing facilities:

- Assist tubs

- Wheelchair showers
- Standard bathtubs
- Free-standing bathtubs

The built environment considerations will cover the following features:

- Location
- Walls
- Floors
- Ceilings
- Doors
- Grab bars

3.6.2.1 Assist Tubs

There are many types of assist bathing systems available. The choice of bathing system will to a great extent, be determined by past experience, familiarity with particular types of equipment or possibly even cost.

Following are a number of very important factors governing the selection of assist tubs:

1. The total bathing system should be considered and not strictly the tub. The total bed-to-bath procedure should be analyzed from the point of view of optimizing patient comfort and safety while minimizing physical stress on the part of the staff.

2. Many assist tubs have a jet action which assists in the removal of dirt and dead skin from the patient while providing a therapeutic action which relaxes the patient. The tub enclosure or seat design as well as the location and angle of the water jets is important to ensure that adequate cleaning of the perineal area is accomplished.

3. The length of the tub unit should be considered so that patients with stiff or spastic limbs and spastic patients can be accommodated.

4. A telephone type shower attachment and/or rinse hose arrangement is necessary for shampooing and rinsing of head and shoulder areas.

5. For infection control, the bath unit must have a back flush system which completely purges water from all pump housings and piping and circulates disinfectant solution through the system.

6. Patient transport and lifting devices into the tub must work smoothly, provide proper support for the patient, be easy to clean and accommodate drying and dressing of the patient following the bath.

There is a type of assist tub with no therapeutic action which has a very low rim to facilitate either manual or mechanical assisted entry and which can be elevated to a choice of working heights to accommodate the bath attendant. Although such a bathing system is less expensive, it should be considered with care since it falls short of the therapeutic type bathing system noted above and does not tend to fulfill the needs of the ambulant disabled in the domestic bathing setting.

3.6.2.2 Wheelchair Showers

There is a great deal of controversy surrounding wheelchair accessible showers with respect to practicability and frequency of use.

Facilities with wheelchair showers were visited in several provinces and in most cases were found to be used for the storage of miscellaneous equipment. This situation appears to be less related to design than to the fact that:

(a) traditionally the geriatric patient prefers a bath to a shower;

(b) although showering should be more sanitary, cleansing of particular body areas is less thorough;

(c) staff finds a tub bathing system easier, less time consuming and not as messy;

(d) the patient finds the tub bath more therapeutic in nature.

It is sometimes supposed that people who are disabled find it easier to use a shower for washing than a conventional bath. However, a lack of evidence in support of this statement makes this generalization controversial.

In cases where, despite the controversy, wheelchair showers are provided, the shower compartment may be fitted with a folding, self-draining seat so that the wheelchair user can transfer to that seat from the wheelchair and/or other walking assists. If the shower compartment is to be made this flexible, additional grab bars will have to be included in addition to other modifications.

In some instances, keeping the patient warm after the shower is a concern. In such cases a heat light could be installed right out of the shower cubicle to warm the patient while being dried. This light usually has an activating time device.

Because of the problem in controlling water splashing, the logical location for a wheelchair shower is within or adjoined to, a tiled floor tub room suitably drained. There should be no retained water at the shower entrance. One approach is to provide a sloped entrance of approximately 37 mms in 150 mms or a very shallow curb maximum 25 mms. Either option creates some difficulty for the wheelchair user as well as the ambulant disabled if a transfer seat is being used.

Although a floor drain is necessary in the shower compartment, only the slightest floor slope to drain within the shower compartment is acceptable.

A review of existing guidelines concerning shower controls seems to favour mounting controls exterior to the shower enclosure so that water can be tempered prior to entering the enclosure. If this is felt to be a safety consideration, a simple shut-off valve could be installed within the enclosure.

At least one side of the shower enclosure should be a half wall so that staff assistance can be given. A privacy curtain can be used on the upper part of this wall.

A telephone hand type shower spray is preferable to the stationary type.

A recessed shelf for soap and other bathing items is required as well as a shelf mounted at wheelchair height outside the shower enclosure for towels, etc.

3.6.2.3 Standard Bathtubs

Although there are disabled people who despite the aid of special equipment are unable to use the bath on their own, many others, including some wheelchair users, can manage a bath independently where suitable aids are provided. Independent bathing should be encouraged with the addition of these aids.

Disabled people with lower limb impairment, including lower limb amputees, prefer to transfer from the wheelchair to a transfer seat or ledge. Sitting on this ledge the legs are then lifted over in front or the body is pivoted and then lowered into the tub. When leaving the bath the process is reversed. This process should be the basis for designing the layout.

A minimum of 1,000 millimeters is required for lateral transfer from a wheelchair, whereas approximately 1,400 millimeters is required for frontal transfer.

The C.M.H.C. document entitled "Nursing Homes and Hospitals" with care services for the elderly design guidelines specifies a transfer seat width of 450 millimeters, whereas, Goldsmith suggests 400 millimeters. These dimensions represent reasonable limits for our purposes. It is noted that the C.M.H.C. document deals strictly with lateral transfer from the right side. If flexibility of transfer is necessary, a transfer seat should be provided at the opposite end of the tub. In this instance, the taps and filler would have to be mounted on the side of the tub as opposed to the normal mounting.

Non-assisted wheelchair use of a bathtub brings out the problem of reaching the taps. As a result, it is suggested that a distance of approximately 400 mms can be provided from the end wall to the tap to provide the necessary access

for chair-bound persons. In addition, a mechanically operated drain plug that is accessible to the chair-bound person is required.

With respect to bathtub dimensions and sections, standard dimensions are considered acceptable, however, the bath should have a flat bottom to minimize the risk of accidents caused by slipping. A vertical assist bar mounted on an end wall in the area of the transfer seat is necessary to assist in the transfer from chair to seat. A strap connected to a ceiling ring bolt directly over the edge of the tub can be a valuable assist during the transfer.

A combined vertical and horizontal bar on the long wall of the tub enclosure with the horizontal bar located approximately 750 mms from the floor is essential to assist the patient in lowering to and pulling up from the transfer seat.

A telephone type shower within easy reach of the head end of the tub is required. Sharp projections on any hardware including taps and filters must be avoided.

3.6.2.4 Free-Standing Bath

With the exception of architectural design criteria for the area in which the free-standing or institutional bath is to be housed, there is little to offer in the form of design guidelines.

The free-standing bath is required where one or two staff members are needed to assist patients who are unable to wash themselves. In some instances these could have an inset or gap at the floor for the helper's feet in order to ease the task of assisting the bather. It is considered that the more efficient assist bathing systems now available will gradually replace this arrangement.

In addition, the free standing or institutional bath should not be regarded as an acceptable substitute for the wall-fixed domestic bath arrangement.

For persons able to bathe independently or with limited assistance, grab rails have advantages and are preferred.

3.6.2.5 Location and Layout

The bathing facility should be located in such a manner that patients do not have to pass through activity or public areas.

It may consist of one room equipped with more than one type of bathing unit, i.e., assist tub and wheelchair shower, subdivided by flexible partitions and/or curtains. It may also consist of separate adjacent rooms housing different bathing systems.

The configuration of the bathing facility will depend on the size of the geriatric unit, patient mix and patient/staff preference for the type of bathing system.

3.6.2.6 Walls

Floor to ceiling ceramic wall tile causes excessive glare and does not absorb sound. A four to five foot band of tile is considered ample. Textured tile, easily cleanable is recommended.

The upper wall surface should be covered with a waterproof vinyl wall covering which will reduce glare, absorb sound and de-institutionalize the room.

3.6.2.7 Floors

Floors shall be non-glare, non-slip, waterproof and easily cleanable. The floor should be sloped towards a suitably positioned floor drain. The pick-up area associated with patient lifting devices should be reasonably level.

3.6.2.8 Ceilings

Suspended ceilings with water resistant acoustic tile are recommended in order to reduce glare, noise and allow for a greater decorative choice.

The number and type of bathing systems housed in this room will dictate size. As it happens that patient lifting devices are hung from ceiling it is important to know at the design stage the size of equipment to be used and the location of controls for those devices. Also it is essential to note that

the patient must be transferred, lifted and swung into the bathing unit while being faced and maintaining eye contact with a staff member.

3.6.2.9 Doors

The entrance door to the bathing area should be located in such a manner as to ensure privacy and wide enough to accommodate wheelchairs.

3.6.2.10 Grab Bars or Safety Bars

Grab bars are only one aspect of safety for geriatric patients in their bathing activities. Other considerations consist of bath control fixtures, features for assisting patients with reaching limitations, additional safety measures such as non-slip strips placed on the bottom of the bath, bath benches, etc.

For more information Selwyn Goldsmith's book "Designing for the Disabled" could be used as a very useful reference.

Following are some of the considerations mentioned in this book. They cover three main transfer areas:

(a) transfer in or out of bath from standing position

(b) transfer in or out of bath from a seated position

(c) transfer by raising or lowering the body in the bath-tub.

(a) Three vertical types of support are considered for transfer in or out of bath from standing positions.

(i) a vertical rail accessible from inside or outside of the bath fixed from floor to ceiling

(ii) an optional vertical rail approximately 600 mms long vertically positioned on the side wall at 200 mms vertical distance from the top edge of tub and at about 600 mms from the feet end of tub

(iii) an optional vertical rail on the wall at head of bathtub when a platform is available. Length of bar is approximately 600 mms and is positioned out of tub at 300 mms horizontal distance from outer edge of tub, its bottom end at approximately 900 mms from floor, top end 1,500 mms.

Where a pole is fixed, no other vertical rails are needed for baths without a platform.

(b) In transfers on the extended platform, the grab bar in (ii) is necessary.

In addition to this grab bar another support bar should be fixed on the side wall of the bathtub to assist in the lowering or raising of the body in or out of the tub.

(c) For lowering or raising the patient into or from the bathtub, horizontal or inclined bars are necessary. They must be fixed on the side wall of the tub. Inclined bars should be starting at mid length of bathtubs at about 2.020 mms vertically over the top edge and should be inclined raising slightly towards the head end of the tub.

Inclined rails rising steeply away from the head end of tub are not recommended.

Whether the tub has a platform or not, the raised end of the inclined bar should be fixed at no more than 250 mms vertically from the top edge of the bathtub.

Horizontal bars in cases of a platform should be fixed on the side wall starting from the head end to mid-tub-length and should be positioned at approximately 100 mms vertically from top edge of tub.

In tubs without platform the horizontal bar could be 600 mms long starting from mid-tub-length towards the head end of bathtub.

Residents who wish to bathe in private should have easy access to a call bell without having to climb out of the tub.

Similarly nursing staff would use the same call bell if they needed assistance while bathing a resident.

Cross rails fitting over tub or slightly above rim height are not recommended.

3.6.2.11 Other accessories

Space should be provided for a portable shelving unit in which bathing and skin care products are stored. This shelving unit will include towel hangers and hooks for robes and clothing as well as storage space for miscellaneous supplies.

3.6.2.12 Ventilation

Ventilation should be provided at a rate of up to 10 air changes per hour and a negative pressure should be created.

In order to conserve energy, two speed fans and two modes of operation in the control system should be considered.

Heating should be separately controlled for bathing areas so that it can be turned up for use times and down other times.

3.6.3 Personal Appearance

Care and attention to personal appearance should be encouraged in the geriatric unit. However, it is uncommon to find a beauty salon within the geriatric unit itself. Rather the salon is generally located and used by all patients of the facility. Since the proximity to the salon may encourage use, there may be additional benefits derived from locating the salon as near as possible to the geriatric unit.

It should be located adjacent to an activity area where the atmosphere is pleasant and existing seating space can be utilized while waiting for an appointment. In case the provision of a salon is judged too expensive, there is need for provision of moveable equipment to meet the needs.

The "salon" should be equipped with a shampoo sink suitably equipped, shelf space for towels and supplies, and adjustable table, hairdressing chair as well as space for a wheelchair. Lighting should be suitable for the hairdressing function and necessary plugs should be provided for hairdressing implements including a hairdryer.

A dark coloured hairdressing sink is required as a protection against dye spots. The hairdressers sink should be equipped with a special hairtrap easily accessible for cleaning. Cold and hot water and hand held shower head should be provided in the hairdresser sink. Consideration should be given to the height of the sink for normal and wheelchair patients. Water and waste lines should, if possible, be the flexible type for height adjustment. Also, not all sinks should be lay back sinks since some patients need to hold their heads forward.

Adequate ventilation should be provided with low velocity air diffusers.

3.6.4 Nourishment

Depending on the size and overall layout of a facility, nourishment can be provided:

- on the ward where residents or staff can prepare drinks and snacks for patients and where applicable, their visitors.

- or a kitchenette adjacent to, or part of, the main dining facility. These spaces sometimes serve as social meeting places and should be designed for wheelchair patient access. They should also be equipped with appropriate utensils for handicapped persons as well as aides designed for disabled persons' use.

Flexibility of design, especially in a smaller facility, may also permit the kitchenette to fill the needs of the occupational therapy and/or ADL functions, as well as leisure/recreation such as baking, etc.

3.6.5 Resident Laundry Room

There is considerable support for the inclusion of a small laundry room in facilities housing the elderly and handicapped people as well as in day hospitals. In case this item is included in the program of the facility the following comments may prove useful.

The laundry room must be large enough to accommodate the following:

1. domestic type automatically operated washer and dryer
2. laundry sink with drainboard (wheelchair accessible)
3. floor mounted drying racks
4. a bench seat
5. shelves for laundry baskets, clothing and supplies
6. ironing board and assisting table

Ambulant people prefer a top-loading machine and wheelchair users prefer a front-loading machine. Therefore it might, if budget allows, be necessary to provide one of each.

It is recommended that an ironing board be securely fixed since portable boards are unstable and difficult to set up. Working heights vary considerably for wheelchair and ambulant people and as a result the board should be easily adjustable in height from approximately 660 mms to 820 mms.

Free floor space should be provided so that a minimum of two users can be in the laundry room at any one time.

3.7 AUXILIARY SERVICES

3.7.1 Location

Offices for social services and home care personnel should be easily accessible to residents as they are often used for interviews. Accommodation for volunteers can be located in any part of the facility as volunteers go out to the residents. However, volunteers should have designated room or area where they can change in comfort, leave their belongings and have a place to post notices and assignments. This is important as it encourages volunteers to feel that they belong to the facility.

3.7.2 Activities

Auxiliary service personnel often are not part of the regular staff of the facility. They may be seconded from a larger facility, work on a part-time basis or be a volunteer. However, the activities that they perform are vital to the efficient and effective functioning of the facility. Volunteers can supplement many of the services undertaken by other staff in the facility from helping to run exercise classes to staffing a gift shop.

Social services will require an office large enough to interview and counsel residents and their families in private. Where the volume of such services is high, this office should be reserved for social services and not shared with other services.

Similarly, the home care personnel will need space to interview people and to co-ordinate the work flow of the home care program. Where home care staff are based in the facility, office and changing accommodation similar to nursing services will be required and the same accommodation may be shared by both categories of personnel.

3.7.3 Furniture and Equipment

The usual office furniture and access to office equipment will be required for auxiliary service staff. All staff volunteers in these areas will require officially designated areas for

changing clothes and lockers for personal belongings. Depending on the nature of their assignments, volunteers may require access to staff showers.

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